



AUXILIUM COLLEGE (Autonomous)

(Accredited by NAAC with A+ Grade with a CGPA of 3.55 out of 4 in the 3rd cycle)
Gandhi Nagar, Vellore – 6.

DEPARTMENT OF ZOOLOGY

LESSON PLAN

2020-2021

Blood - Plasmodium vivax, Lymph - Wuchereria bancrofti; CSF - toxoplasma, Perinicious malaria-
 clinical diagnosis of bacterial diseases - Typhoid;
 clinical diagnosis of viral disease - Hepatitis B;
 clinical diagnosis of fungal infections - Candidiasis

COURSE INSTRUCTOR:

Subject: Semester: II - 2020-2021. M. ANURADHA.

Subject code: PEZO E17.

Class: II PG.

Online mode of Teaching.

Week	No. of Hours	unit	Topics	Learning Resources.
July 8/7/2020 to 31/7/2020	4 hrs	I	Scope of CLT Management and Administration General lab apparatus and procedures glasswares used in CLT studies	E-Resource MLT Course Manual. Medical lab Technology by Mukherjee Kaul and Sood (Ranik) and E-Resource
August 1/8/2020 to 31/8/2020	4 hrs	I	Stilization and disposal of infected materials.	
		II	Common parasites of man, life cycle and diagnosis in Body fluids. Plasmodium vivax W. Bancrofti Toxoplasma Perinicious Malaria Typhoid Hepatitis Candidiasis.	Text Book of Medical parasitology by Parija. mechanism of microbiology disease by Schaeche-ter (M) Jawetz, Melnick & Adelbergs Medical microbiology ED-25 by pandey. E-Resource.
Sep 1/9/2020 to 30/9/2020	4 hrs	III	Share	

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 Associate Professor & Head
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PCZOK17 - Animal Behaviour

Objectives:

This paper has been designated to highlight the Behavioural strategies and adaptations of animals for their survival.

unit V:

Social Behaviour - Social Organization in Insects and mammals; Advantages of Social Behaviour; Reproductive Behaviour (mating) and Courtship.

M

Semester III 2020-2021

Subject: Animal Behaviour.

Subject code: PCZOK17

Class: II PG. Teaching Methodology: Online Mode

Week	No. of hrs	unit	Topics	Learning Resource.
July	1	V	Social Behaviour	Animal Behaviour
Aug	1		Social organization in Insects, Mammals	by Metaland Animal Behaviour
Sept	1		Advantages of Social Behaviour	by Agarwal (V.K)
Oct	1		Reproductive Behaviour (mating) and Courtship	Animal Behaviour by Powell and Social Behaviour by Metaland

UCZOA17 - Invertebrates

Objectives:

To understand the systematic and functional morphology of various groups of Invertebrates.

To study their economic importance, affinities and adaptations.

unit I:

Phylum - Porifera

Type study - Sycon

General Essay: Canal system in sponges

Phylum - Coelentrata

Type study - Obelia.

General Essay - Corals & Coral reef, Polymorphism

unit II:

Phylum - Annelida

Type study - Nereis.

General Essay - Adaptive radiations in Polychaetes

Phylum - Arthropoda

Type study - Prawn

General Essay - Social life of insects, Parasitism and its importance

unit III:

Phylum - Mollusca

Type study - Freshwater Mollusk

General Essay - Reproduction in Mollusca

SEMESTER I : 2020-2021.Subject : Invertebrata COURSE INSTRUCTOR:
MS. ANURADHA

Sub. Code : UCZOAI7

Class: IUG Teaching Methodology : Online Mode

Week	No. of hrs	unit	Topics Covered	Learning Resource.
		II	Porifera Sycon canal system in sponges Coelentrata Obelia Corals and Coral Reef Polymorphism.	Kotpal, R.L. et al Porifera - Rastogi publication. Kotpal, R.L. Coelentrata - Rastogi publication.
		IV	Annelida Nereis Adaptive Radiation in polychaetes.	Jordan E.L. and P.S. Verma - Invertebrate zoology
			Arthropoda Prawn social life of Insects paripatus.	Kotpal R.L. - Arthropoda - et al publication.
		V	Mollusca Mussel Respiration in Mollusca.	Manual of Zoology by Ekambaranath Deyyar & T.N. Anand Krishnan.

SEMESTER - I : 2020-2021.PCZOAI7 : Phylogeny of Invertebrata & ChordataObjectives:

To enlighten the students with adequate scientific details on origin, evolution adaptive radiations and phylogenetic relationships of invertebrates and chordates.

unit : II

Comparative anatomy of Respiratory system - Respiratory organs - gills, lungs; Circulatory system - Evolution of Heart, Modification of aortic arches, Modifications of veins, Urinogenital system. Origin and structure of kidney across vertebrates, gonads and their ducts.

unit IV:

Evolution in Mollusca, larval forms in Echinoderms and their significance; origin of Tetrapod limbs; extinct Reptiles; Archaeopteryx and affinities; Egg laying Mammals.

unit V:

Structural, functional and phylogenetic significance of Lophophora, phoronida and Rotifera.

Share

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SEMESTER - I : 2020-2021

Subject : Phylogeny of Invertebrata & Chordata

Sub. Code : PCZOAI7 COURSE INSTRUCTOR :

M. ANURADHA

Class : I PG

Teaching Methodology :

Week	hrs	unit	Topics covered	Learning Resource
		II	Comparative Anatomy of Respiratory System, Organs Gills, Lungs	Modern Textbook of Zoology Vertebrates by Kotpal.
			Circulatory system, Evolution of heart	Comparative anatomy of the Vertebrates by Eaton
			Modification of Aortic arches, vein	"
			urogenital system	"
			origin & st. of kidney	"
			gonads, ducts	"
		IN	Briozoa in Mollusca	Mollusca by Kotpal
			Larval forms in Echinodermata & significance.	Echinodermata by Kotpal.
			Origin of Tetrapods	Comparative Chordate anatomy by Girish Chopra & Rhotash Chand Gupta.
			Archaeopteryx & affinity, Egg laying mammals.	"
		V	Locophora	"
			Phoronida	"
			Rotifera	"

Work done

Date	Class	Topics covered	References	Platform
10.7.20	II PG CLT	Scope of CLT	E Content	Ppt in google meet.
17.7.20	II PG CLT	Laboratory administration and management.	MLT Course manual	PPT.
24.7.20	II PG CLT	First aid in laboratories.	MLT by Mukerjee Kanak	PPT
31.7.20	II PG	General lab apparatus	MLT by sood	PPT.
07.8.20	II PG	sterilization and disposal of infected materials.	MLT by sood and E-content	PPT.
14.08.20	II PG	Glasswares used in CLT	E-Content	PPT
11.08.20	II PG	Common parasites life cycle and diagnosis in man.	Text book of Medical Parasitology by parija	PPT.
18.8.20	II PG	Blood-Plasmodium	Textbook of medical Parasitology by parija.	PPT
1.09.20	II PG CLT	Lymph-wuchereria in kala-aziti.	Text book of Medical Parasitology by parija.	PPT.

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Even Semester - 2021-2022

Subject: Chordates
Code: ZOO2012

COURSE INSTRUCTOR:
Ms. ANURADHAM

Unit: II Pisces

Type Study: Shark, Affinities of cyclostomata.
General Essay: Migration in fishes, Accessory
Respiratory organs, Parental care in fishes,
Electric organs.

Unit: III Amphibia

Reptilia: Type study: Calotes.
General Essay: Poison apparatus and biting
Mechanism in snakes, Identification of Poisonous
and non-poisonous snakes

Unit: V Mammals:

Type study: Rabbit.
General Essay: Dentition in Mammals, Adaptive
radiations in Mammals, Characteristics of proto-
theria with examples, Characteristics of Eutheria
with examples, Characteristics of Metatheria with
examples.

Month	Week	No of hrs	Unit	Topics	Teaching Methodology	Learning Resource	Mtd. of Evaluation
Jan	1	5	2	Affinities of cyclostomata, Type study: Shark.	Online-ppt.	Chordates by Arumyan.	Home Test.
Jan	2	5	2	Type study: Shark.	Online ppt.	chordates by Arumyan.	Home Test.
Jan	3	4	2	Type study: Shark.	Online-ppt.	Chordates by Arumyan.	Home Test.
Jan	4	4	2	Migration in fishes, Accessory respiratory organs, Parental care in fishes, Electric organs.	Online ppt.	chordates by Arumyan.	Home test.

DEPARTMENT OF ZOOLOGY
CIRCULAR REFERENCE

Month	Week	No of hrs	Unit	Topics	Teaching Methodology	Learning Resource	Mtd. of Evaluation
Feb	1	4	3	Calotes	ppt	Chordates by Arumyan.	Home Test.
Feb	2	4	3	Calotes	ppt	Chordates by Arumyan.	Home Test.
Feb	3	4	3	Poisonous apparatus and biting mechanism in snakes	ppt	Chordates by Arumyan.	Home Test.
Feb	4	4	3	Identification of Poisonous and non-poisonous snake.	ppt	"	Home Test.
Feb	1	4	5	Rabbit	ppt	"	"
March	2	4	5	Rabbit	"	"	"
March	3	4	5	Dentition in Mammals, Adaptive Radiation in Mammals.	ppt	"	"
March	4	4	5	Characteristics of prototheria with examples, Characteristics of Eutheria with examples, Characteristics of Metatheria with examples.	"	"	"

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Research Methodology
Unit V: Reference work and preparation of dissertation
PubMed, google scholar, Infotrieve, Computer aided
techniques for data analysis, SPSS software, Data
presentation and powerpoint presentation, Reference
collection, preparation of thesis, preparation
of scientific paper for publication in a journal.

Month	Week	Unit	Topics	Teaching Methodology	Learning Resource	Utd. of Evaluation
Jan	1	5	Reference work & preparation of dissertation	PPT	Research Methodology by Kohari.	Home Test
Jan	2	5	Pubmed, Google Scholar & Infilibnet	PPT	"	"
Jan	3	5	Computer aided techniques for data analysis, SPSS software	"	Statistical Mtd. in Biological & Health Science by Macgraw Hill.	"
Jan	4	5	Data presentation and powerpoint presentation.	"	Research Methodology in Biological Science by Palanichamy	"
Feb	1	5	Reference collection preparation of thesis.	"	"	"
Feb	2	5	Preparation of scientific paper for publication in Journal.	"	How to write & Publish Scientific Paper by Day.	"

Water fish culture, Raceway Culture, Cage, pen and rack culture system, control of parasites, predators & weeds in culture ponds.

Month	Week	Unit	Topics	Teaching Methodology	Learning Resource	Utd. of Evaluation
Jan	1	2	Biology and culture techniques of shell fisheries.	Chalk & Board	Commercial fish farming by Hepher & pruginin.	Test
	2	2	Prawn, Lobster	"	Fish and fisheries by Pastogi.	"
	3	2	Crab, Lobster	"	"	"
	4	2	Clams, Cuttle fish	"	"	"
Feb	1	2	Statewise Commercial & export potential of shell fisheries, Economic importance of shellfish.	"	Marine Product Export Review by Wiley & Sons.	"
	2	4	Composite fish culture, Paddy cum fish culture, Integrated fish culture.	"	"	"
	3	4	Sewage and Raceway fish culture.	"	Fishery Biology & aquaculture - Shanmugam	"
	4	4	Cage, Pen, Rack	"	"	"
March	1	4	Control of parasites & predators.	"	Fish & fisheries by Pastogi	"
	2	4	Weeds in culture Ponds	"	"	"

PEZ020: Fishery Biology.

Unit: 2

Biology and culture techniques of shell fisheries, Marine and fresh water Crustacean prawn, Lobster crabs, Molluscs - Oysters, Clams, Cuttle fish, statewise Commercial & export potential of shell fisheries, Economic importance of shell fisheries.

Unit: 4

Composite fish culture - paddy cum fish culture, Integrated fish culture, sewage

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Month	Week	Unit	USZOAI20 - Public Health & Hygiene - Topics	Teaching Method	Learning Resource	Method of Evaluation
Jan	1	1	Scope of public Health & Hygiene, concepts of Health and disease.	ppt	Course Manual	Test
	2	1	Sources and functions of Macro and Micro nutrients.	"	"	"
	3	2	Nutrition & Health, classification of foods.	"	"	"
	4	2	Vitamins deficiency, food hygiene, balanced diet.	"	"	"
Feb	1	2	Nutritional requirements of special groups.	"	"	"
	2	3	Environment and Health water & Air pollution.	"	"	"
	3	3	Noise and Land pollution	"	"	"
	4	3	Epidemiology of Communicable disease, Respiratory infections, Malaria.	"	"	"
March	1	4	Intestinal Infection - Amoebiasis, Athropod borne diseases - Malaria STD & AIDS	"	"	"
	2	5	Non-communicable disease and conditions Diabetes and Obesity	"	"	"
	3	5	Mental health, Causes of Mental ill-health stress and strain Eating disorders.	"	"	"

PC20E20 - Applied Entomology COURSE INSTRUCTOR: M ANURADHA

Unit: 1
 Causes for insects assuming pest status, forecasting pest outbreak, Biology, nature, extent of damage and control measures of Insect pest of sugarcane - Chilo infuscatellus, Tryporyza nivella, Chilo sacchariphagus. Cotton - Aphis gossypii, Dysdercus koenigii, Thrips tabaci. Groundnut - Aphis craccivora, Aproraeza modicella, Helicoverpa armigera, Coconut - Rhyecophorus ferrugineus, oryctes rhinoceros, Nephantis seiropa.

Unit: 4
 Classification of Insecticides - chemical Nature, Inorganic - Arsenic and fluorine compounds, organic compounds - animal origin - Derris, plant origin - nicotenioids, pyrethroids, rotenoids, Hydrocarbons, synthetic organic compounds - DDT, BHC, parathion, mode of action - Physical poison, protoplasmic poison, respiratory poison, Nerve poison. Mode of Entry, stomach poison, contact poison fumigants.

Month	Week	Unit	Topics	Teaching Method	Learning Resource	Method of Evaluation
Jan	1	1	Causes for insect assuming pest status Forecasting pest outbreak.	ppt	Elements of Economic Entomology by vasanthani	Test
	2	1	Sugarcane Pest - Chilo infuscatellus Tryporyza nivella Chilo sacchariphagus	"	"	"
	3	1	Pest of Cotton Aphis gossypii, Dysdercus koenigii, Thrips tabaci	"	"	"

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Month	Week	unit	Topics to be covered	Teaching Method	Learning Resource	Mid. Evaluation
Jan	4	1	Pest of groundnut - Aphis craccivora, Aproraema modicella Helicoverpa armigera	ppt	Economic Entomology by Vasanth Raj	Test
Feb	1	1	Pest of coconut - Rhynocophorus ferrugineus, oryctes rhinoceros, Nephantis Seiropa	"	"	"
	2	4	Classification of Insecticides, chemical nature	"	Introduction to economic zoology by Thomas	"
	3	4	Inorganic - Arsenic and fluorene comp - Oxides	"	Handbook of Entomology by chinmay gossai - ni	"
	4	4	organic - Animal origin - Nereisboxin	"	"	"
March	1	4	Plant origin - Nicotinoids, pyrethroids, Rotenoids, Hydrocarbons.	"	concept of Insect control by G. hosh.	"
	2	4	Synthetic organic compounds - DDT, BHC Parathion	"	"	"
	3	4	physical, protoplasmic and respiratory poison.	"	"	"
	4	4	Nerve, stomach & contact poison, fumigants.	"	"	"

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11.1.2024

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Date	9.3.2020 to 13.3.2020	Class	TuW	Topic covered	Adaptive Radiation in Amphibians in Pigeon - Type study.	Learning Resources	Charafata Kotpada, Charafata Kotpada, Jordan	Methodology	chalk & talk
					Asexual Reproduction - forms, cleaving.	Development - Biology - Polinily		chalk & talk	
					Antenna pinnella Radio Telemetry	Pest Management - Radiation		chalk & talk	

ODD SEMESTER 2020

Programme: M-Sc - Zoology
 Programme code: 23
 Semester: III
 Course: Environmental Biology
 Course code: PCZOI17
 Credits: 5
 Total hours: 15 hrs
 Max. marks: 40 + 60 mark
 Course instructor: Hannah Elizabeth

Month	Week	no. of hours	COURSE UNIT	INSTRUCTOR: HANNAH ELIZABETH	Teaching methodology & student centred method	Learning Resources	Method of Evaluation
July	1	2	1	Major classes of contaminants Uptake	Ppt in google meet	Net source Ecology & Environment - Sharma	Test in google classroom
	2	2	2	Biotsransformation	Ppt in google meet	Net source Ecology - V.K. Agarwal	Test in google classroom
	3	2	3	Detoxification, Elimination	Ppt in google meet	Net source Ecology - V.K. Agarwal	Test in google classroom
	4	2	4	Factors affecting Bioaccumulation	Ppt in google meet	Net source Ecology & Environment - Sharma	Test in google classroom
August	1	2	5	Pesticides & other chemicals in agriculture industry	Ppt in google meet	Net source Ecology - V.K. Agarwal	Test in google classroom
	2	2	6	Important Heavy metals & their role Occupational Health	Ppt in google meet	Net source Ecology & Environment - Sharma	Test in google classroom
	3	2	7	Hazards and their central	Ppt in google meet	Net source Ecology - V.K. Agarwal	Test in google classroom
	4	2	8	Agrochemicals use & misuse, alternatives	Ppt in google meet	Net source Ecology & Environment - Sharma	Test in google classroom
September	1	2	9	Impacts of chemicals on Biodiversity	Ppt in google meet	Net source Ecology - V.K. Agarwal	Test in google classroom
	2	2	10	Biodegradation of chemicals	Ppt in google meet	Net source Ecology - V.K. Agarwal	Test in google classroom
	3	2	11	Global Ecology towards sustainable civilization	Ppt in google meet	Net source Basic Ecology - Odum	Test in google classroom
	4	2	12	Societal gaps	Ppt in google meet	Net source Basic Ecology	Test in google classroom

COURSE INSTRUCTOR: HANNAH ELIZABETH S.
 Teaching methodology Learning
 student centric method Resources

Method of Evaluation

Month
 week
 no of
 down

Topic

Long term transition ppt in google meet
 Net source

Test in
 google
 classroom
 Test in
 google
 classroom
 Test in
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 classroom
 Test in
 google
 classroom
 Test in
 google
 classroom

Human Design - ppt in google meet
 net source
 Ecology - via
 Agarwal
 Environmental Laws - ppt in google meet
 Net source
 Ecology - via
 Agarwal
 Environmental Monitoring - ppt in google meet
 Net source
 Ecology - via
 sharma
 Environmental Assessment - ppt in google meet
 Net source
 Ecology - via
 sharma

2
 2
 2
 2
 2

October
 I
 II
 III
 IV
 November
 I

Share

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Programme	M.Sc. Zoology
Programme code	23
Semester	III
Course	Animal Behaviour
Course code	PCZOK17
Hours	15 Hrs
Credits	5
Max Marks	40+60 marks
Course Instructor	Hannah Elizabeth S.

COURSE INSTRUCTOR: HANNAH ELIZABETH.A

Month	Week	No of Hours	Unit	Topic	Teaching methodology & student center method	Learning Resources	Methods of Evaluation
July	I	1	IV	chemical communication	ppt in google meet	Vk. Agarwal	Animal behaviour Test in google classroom
	II	1	IV	Phuomones and Discovery.	ppt in google meet	Vk. Agarwal	Animal behaviour Test in google classroom
	III	1	IV	Types of Phuomones	ppt in google meet	Vk. Agarwal	Animal behaviour Test in google classroom
	IV	1	IV	Insect phuomones	ppt in google meet	Vk. Agarwal	Animal behaviour Test in google classroom
August	I	1	IV	structure of Insect Perceiving Phuomones	ppt in google meet	Vk. Agarwal	Animal behaviour Test in google classroom
	II	1	IV	Functions of Phuomones	ppt in google meet	Vk. Agarwal	Animal behaviour Test in google classroom
	III	1	IV	Vertebrate Phuomones - Reptiles	ppt in google meet	Vk. Agarwal	Animal behaviour Test in google classroom
	IV	1	IV	Phuomones in mammals	ppt in google meet	Vk. Agarwal	Animal behaviour Test in google classroom
	V	1	IV	Foraging Theoria	ppt in google meet	Vk. Agarwal	Animal behaviour Test in google classroom
September	I	1	IV	Methods of Foraging	ppt in google meet	Vk. Agarwal	Animal behaviour Test in google classroom
	II	1	IV	Homing in birds	ppt in google meet	-Reena Mathur	Animal behaviour Test in google classroom
	III	1	IV	Homing in Fishes	ppt in google meet	-Reena Mathur	Animal behaviour Test in google classroom
	IV	1	IV	Courtship Mechanism Anchiids	ppt in google meet	Vk. Agarwal	Animal behaviour Test in google classroom
October	I	1	IV	Courtship in insects & Fishes	ppt in google meet	Vk. Agarwal	Animal behaviour Test in google classroom
	II	1	IV	Courtship in Amphibians, Reptiles mammals	ppt in google meet	Vk. Agarwal	Animal behaviour Test in google classroom
	III	1	IV	Territorialism	ppt in google meet	Vk. Agarwal	Animal behaviour Test in google classroom
November	I	1	IV	Territorialism	ppt in google meet	Vk. Agarwal	Animal behaviour Test in google classroom

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Programme	M.Sc. Zoology
Programme code	23
Semester	I
Course	Phylogeny of Invertebrates and Chordata.
Course code	PCZOAI7
Hours	2
Credits	5
Total Hours	15
Max Mark	40 + 60
Course Instructor	Hannah Elizabeth S.

Month	Week	No of hours	Unit	Topic	COURSE INSTRUCTOR : HANNAH ELIZABETH S.	Teaching Methodology	Resources	Method of evaluation
I	I	2	1	Origin and Evolution of Metazoan theories.	Ppt in Google meet	Kotpal	Evolution of Invertebrates	Test in Google classroom
	II	2	1	Metamerism classification theories	Ppt in Google meet	Kotpal	Evolution of Invertebrates	Test in Google classroom
	III	2	1	Embryological theory	ppt in Google meet	Kotpal	Evolution of Invertebrates	Test in Google classroom
	IV	2	1	Origin of Cephalization	ppt in Google meet	Kotpal	Evolution of Invertebrates	Test in Google classroom
	V	2	1	Jawed vertebrates	ppt in Google meet	Kotpal	Evolution of Invertebrates	Test in Google classroom
	VI	2	II	Adaptive radiations in Annelida	ppt in Google meet	Kotpal	Vertebrates - Kotpal	Test in Google classroom
	VII	2	II	Molluscs	ppt in Google meet	Kotpal	Vertebrates - Kotpal	Test in Google classroom
	VIII	2	II	Fishes	ppt in Google meet	Kotpal	Vertebrates - Kotpal	Test in Google classroom
	IX	2	II	Adaptive radiations in Amphibians - Limbless Amphibians	ppt in Google meet	Kotpal	Vertebrates - Kotpal	Test in Google classroom
	X	2	II	Adaptive radiations in Mammals	ppt in Google meet	Kotpal	Vertebrates - Kotpal	Test in Google classroom

Hand

COURSE INSTRUCTOR: HANNAH ELIZABETH'S
Teaching Methodology Learning Resources

Method of Evaluation

No of Week Hours Unit

Topic

XI	2	✓	Sipunculida - structure	Major phyla - rotipal	Test in google classroom
XII	2	✓	Sipunculida - function, Phylogenetic significance ppt in fogdement	Minor phyla - rotipal	Test in google classroom
XIII	2	✓	Chaetognatha - structure, function	Minor phyla - rotipal	Test in google classroom
XIV	2	✓	Phylogenetic significance ppt in fogdement	Minor phyla - rotipal	Test in google classroom
XV	2	✓	Phogonophora - structure ppt in fogdement	Minor phyla - rotipal	Test in google classroom
	2	✓	function and phylogenetic significance ppt in fogdement	Minor phyla - rotipal	Test in google classroom

Hand

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Programme	B.sc. zoology
Programme code	33
Semester	I
Course	Invertebrata
Course code	UCZOAI7
Hours	2
Credits	6
Total Hours	15 Hrs
Max Mark	40 + 60
Course Instructor	Hannah Elizabeth's

Month	Week	No of Hours	Unit	Topic	Teaching Methodology	Learning Resources	Method of Evaluation
September	I	2	I	General character of Invertebrata	ppt in googlemet	Invertebrata - Jordan	Test in google classroom
	II	2	I	Binomial nomenclature - classification	ppt in googlemet	Invertebrata - Jordan	Test in google classroom
	III	2	I	Protozoa - classification	offline	Invertebrata - Jordan	Test in google classroom
	IV	2	I	Plasmodium vivax structure, lifecycle	ppt in googlemet	Invertebrata - Jordan	Test in google classroom
October	I	2	II	Nutrition	ppt in googlemet	Invertebrata - Jordan	Test in google classroom
	II	2	II	Locomotion	ppt in googlemet	Invertebrata - Jordan	Test in google classroom
	III	2	III	Platyhelminthes - classification	ppt in googlemet	Invertebrata - Jordan	Test in google classroom
	IV	2	III	Tapeworm structure function, lifecycle	ppt in googlemet	Invertebrata - Jordan	Test in google classroom
November	I	2	III	Parasitic adaptations in Helminthes	ppt in googlemet	Invertebrata - Jordan	Test in google classroom
	II	2	III	Aschelminthus classification	ppt in googlemet	Invertebrata - Jordan	Test in google classroom
	III	2	III	Ascaris - structure, function	ppt in googlemet	Invertebrata - Jordan	Test in google classroom
	IV	2	III	Ascaris life cycle	ppt in googlemet	Invertebrata - Jordan	Test in google classroom
December	I	2	IV	Echinodermata - classification	ppt in googlemet	Invertebrata - Jordan	Test in google classroom
	II	2	IV	sea star structure	ppt in googlemet	Invertebrata - Jordan	Test in google classroom
	III	2	IV	sea star water vascular system	ppt in googlemet	Invertebrata - Jordan	Test in google classroom
	IV	2	IV	Larval forms in Echinoderms & their significance	ppt in googlemet	Invertebrata - Jordan	Test in google classroom
	V	2		Revision	googlemet	Invertebrata - Jordan	Test in google classroom

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 Vellore - 632 009.

Month	Week	Hours	Unit	Topic	Course Instructor: HANNAH ELIZABETHS	Teaching methodology	Process	Economic Zoology	Method of evaluation
1	2	2	2	Vegetable pest	Ppt in Hooploomet	Ppt in Hooploomet	Economic Zoology - Shukla	Test in Hooploomet classroom	
2	2	2	2	Fruits pest	Ppt in Hooploomet	Ppt in Hooploomet	Economic Zoology - Shukla	Test in Hooploomet classroom	
3	2	2	2	Paddy pest	Ppt in Hooploomet	Ppt in Hooploomet	Economic Zoology - Shukla	Test in Hooploomet classroom	
4	2	2	2	wheat pest	Ppt in Hooploomet	Ppt in Hooploomet	Economic Zoology - Shukla	Test in Hooploomet classroom	
5	2	2	2	Household pest	Ppt in Hooploomet	Ppt in Hooploomet	Economic Zoology - Tomer	Test in Hooploomet classroom	
6	2	3	3	Cattle pest	Ppt in Hooploomet	Ppt in Hooploomet	Economic Zoology - Tomer	Test in Hooploomet classroom	
7	2	3	3	Fowl pest	Ppt in Hooploomet	Ppt in Hooploomet	Economic Zoology - Tomer	Test in Hooploomet classroom	
8	2	3	3	sheep and goat pest	Ppt in Hooploomet	Ppt in Hooploomet	Economic Zoology - Tomer	Test in Hooploomet classroom	
9	2	3	3	Insect vectors of Avianmuh	Ppt in Hooploomet	Ppt in Hooploomet	Economic Zoology - Tomer	Test in Hooploomet classroom	
10	2	5	5	Bacterial pesticide	Ppt in Hooploomet	Ppt in Hooploomet	Integrated pest management - Pradhan	Test in Hooploomet classroom	
11	2	5	5	Fungal pesticide	Ppt in Hooploomet	Ppt in Hooploomet	Integrated pest management - Pradhan	Test in Hooploomet classroom	
12	2	5	5	Viral pesticide	Ppt in Hooploomet	Ppt in Hooploomet	Integrated pest management - Pradhan	Test in Hooploomet classroom	
13	2	5	5	Integrated Pest management	Ppt in Hooploomet	Ppt in Hooploomet	Integrated pest management - Pradhan	Test in Hooploomet classroom	
14	2	5	5	Nonconventional pest control	Ppt in Hooploomet	Ppt in Hooploomet	Integrated pest management - Pradhan	Test in Hooploomet classroom	
15	2	5	5	Plant Protection	Ppt in Hooploomet	Ppt in Hooploomet	Integrated pest management - Pradhan	Test in Hooploomet classroom	

Programme	M.sc. Zoology
Programme code	23
Semester	II
Course	Biodiversity and Wildlife Conservation
Course code	PCZON17
Hours	1
Credits	5
Total hours	15
Max. Marks	40 + 60
Course Instructor	Hannah Elizabeths.


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COURSE INSTRUCTOR: HANNAH ELIZABETH S

TEACHING METHODOLOGY

Learning Process

METHOD OF EVALUATION
Test in her

Month	Week	Day	Unit	Topic	Material	Method of Evaluation
1	1	1	1	Biodiversity in India	Ppt in Hooplument	Test in her
1	1	1	1	Genetic diversity	Ppt in Hooplument	Test in her
2	1	1	1	Species diversity	Ppt in Hooplument	Test in her
3	1	1	1	Ecosystem diversity	Ppt in Hooplument	Test in her
4	1	1	1	Biogeographic classification of India	Ppt in Hooplument	Test in her
5	1	1	1	Natural and local level classification	Ppt in Hooplument	Test in her
6	1	1	1	India as mega diversity nation	Ppt in Hooplument	Test in her
7	1	1	1	Ecology and Ecosystems	Ppt in Hooplument	Test in her
8	1	1	1	Energy flow in the ecosystem	Ppt in Hooplument	Test in her
9	1	1	1	Forest ecosystem	Ppt in Hooplument	Test in her
10	1	1	1	Agratic ecosystem	Ppt in Hooplument	Test in her
11	1	1	1	Lake ecosystem	Ppt in Hooplument	Test in her
12	1	1	1	Ocean ecosystem	Ppt in Hooplument	Test in her
13	1	1	1	Urban ecosystem	Ppt in Hooplument	Test in her
14	1	1	1	Revision	Quiz in Hooplument	Test in her
15	1	1	1	Revision	Quiz in Hooplument	Test in her

Programme	B.Sc. Zoology
Programme code	35
Semester	1
Course	Chozdata
Course code	UCZOBI4
Hours	1
Credits	5
Total hours	15
Max Marks	40 + 60
Course Instructor	Hannah Elizabeths

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Month	Week	No of Hours	Unit	Topic	Teaching Methodology	Learning Process	Method of evaluation
	1	3	1	General characters & outline classification of chordata	ppt in Hoopliment	Chordata - Jordan	Test in HCR
	2	3	1	Protochordata - general characters & outline classification	ppt in Hoopliment	Chordata - Jordan	Test in HCR
	3	3	1	Type study: Amphioxus.	ppt in Hoopliment	Chordata - Jordan	Test in HCR
	4	3	1	Origin of chordates	ppt in Hoopliment	Chordata - Jordan	Test in HCR
	5	3	3	Type study Outline Frog classification of Amphibia & general character	ppt in Hoopliment	Chordata - Jordan	Test in HCR
	6	3	3	Type study: Frog.	ppt in Hoopliment	Chordata - Jordan	Test in HCR
	7	3	3	Parental care in Amphibians	ppt in Hoopliment	Chordata - Jordan	Test in HCR
	8	3	3	Adaptive radiations in Amphibians	ppt in Hoopliment	Chordata - Kottal	Test in HCR
	9	3	4	Outline classification & general character of Aves.	ppt in Hoopliment	Vertebrates. Kottal	Test in HCR
	10	3	4	Type study: Pigeon.	ppt in Hoopliment	Chordata. Kottal	Test in HCR
	11	3	4	Flight adaptations in birds	ppt in Hoopliment	Chordata - Jordan	Test in HCR
	12	3	4	Migration in birds.	ppt in Hoopliment	Chordata - Jordan	Test in HCR
	13	3	4	Flightless birds	ppt in Hoopliment	Chordata - Jordan	Test in HCR
	14	3		Revision	Oral test in Hoopliment		Test in HCR
	15	3		Revision	Oral test in Hoopliment		Test in HCR

18

Shani

Shani
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SEMESTER : III COURSE CODE : PCZOK17
 MAX. MARKS : 40+60 : COURSE INSTRUCTOR : Dr. N. UMA

COURSE : ANIMAL BEHAVIOUR. Hours: 1+1/wk.

Month	Week	Topic
September	I	Ethology - Definition, Introduction - History
	II	Biorhythms and biological clocks
	III	Instinct and Learning
	IV	Cognition
	V	Stereotyped and Acquired behaviour
October	I	Learning
	II	Memory
	III	Social Organization in Mammals
	IV	Social organization in Insects
	V	Advantages of Social behaviour
	VI	Reproductive Behaviour
	VII	Mating and courtship
	VIII	

Teaching Methodology	Learning Resources	Method of Evaluation
Online	Offline	
PPT, video	-	Reena Mathur, Gunecia, Hare Goward Mandal
PPT	Notes	Quiz Oral test
PPT, video	Reena Mathur, Notes	M. M. Ranga Prasad + Vasantika
-	(Mafeland)	Verma + Agarwal
PPT, video	-	Hoshang S. Gundam, Hare Goward Singh
-	Notes from Fatik Baran Mandal	Objective type
PPT, video	-	Fatik Baran Mandal
-	-	Recall
PPT, video	-	Verma + Agarwal
-	Notes, Study Material	Objective type
-	-	Reena Mathur
PPT, video	-	T. K. Saha
-	Notes	Quiz
-	-	Fatik Baran Mandal, T. K. Saha
-	-	Multiple choice
-	-	T. K. Saha, Reena Mathur
PPT, video	-	Written Test
-	-	S. N. Prasad, Vasantika Kashyap
-	-	Objective test
-	-	T. K. Saha

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SEMESTER : III COURSE : UCZOD17 - CELL BIOLOGY
 COURSE INSTRUCTOR : Dr. N. UMA CHANDRA

HOURS 2+1/Week MAX. MARKS : 40+60 CREDITS : 6

MONTH	WEEK	HOUR	UNIT	TOPIC
July	II	2	II	Mitochondria - Historical, Morphology Structure, chemical composition
		2	II	Glycolysis, oxidative decarboxylation, Krebs
		2	II	Respiratory chain, oxidative Phosphorylation
		2	II	Other functions of Mitochondria
		2	II	Golgi Complex - Morphology, Functions
		2	II	Endoplasmic Reticulum - Structure + function
		2	II	Lysosomes - types and functions.
		2	II	Ribosomes
		2	II	Centrioles - Structure and Function
		2	II	Nucleus and Nucleolus
September		2	II	Chromosomes : Structure and functions
	I	III	III	CA Test
	III	2	III	Giant chromosome - Polytene and lampbrush
October	IV	2	IV	Nucleic acids : DNA - Ultra structure and Replication
	II	2	IV	RNA Structure and types
	III	2	III	Gene Regulation
	IV	2	III	lac operon

TEACHING METHODOLOGY	LEARNING RESOURCES	EVALUATION
PPT, video, Google Meet	Verma + Agarwal v.k. Powar C.B.	Quiz
PPT, video, Google classroom	C.B. Powar, Arumugam	written
PPT, video, Google Meet	Verma + Agarwal v.k. Arumugam	Recall
PPT, video, Google Meet	Powar, Madan Mohan Rao	Quiz
video, PPT, Google Meet	Verma + Agarwal, Powar	Mind map
Google Meet, video, PPT	Arumugam, Verma + Agarwal and Powar	Quiz
PPT, video,	Rastogi, Verma + Agarwal	Mind map
PPT, video, Discussion	Rastogi, Powar, Verma + Agarwal	Diagram
video, PPT	Rastogi, Arumugam	Home test
video, PPT, Google Meet	Rastogi, Verma + Agarwal	written
Google classroom		
PPT Google Meet	De Robertis + De Robertis	Home test
video, PPT, Google Meet	Gerald Karp + De Robertis	Objective Test
PPT, Google Meet	Karp + De Robertis	Quiz
Google Meet,	Karp, De Robertis, Verma and Agarwal	written Test
video, PPT, Google Meet	Arora, Verma + Agarwal Arumugam	Diagram

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SEMESTER - V UCZOG17 - DEVELOPMENTAL BIOLOGY

COURSE INSTRUCTOR: DR. K. UMA CHANDRA

Hours 3+1/WK. MAX. Marks 40+60. Credits - 5

Month	Week	Hour	Unit	Topic
July	II	2	I	Introduction and history of Developmental Biology
	III	2	I	Spermatogenesis
	IV	2	I	Oogenesis, Types of Eggs
August	I	2	I	Polarity, Symmetry, Egg Membranes
	II	2	I	Extra Embryonic Membranes in chick
	III	2	II	Fertilization - Mechanism and physiology
	IV	2	II	Theories of Fertilization
September	I	3	II	Parthenogenesis
	II	3	II	Cleavage
	III	3	III	Fate map, Morphogenetic movements and Gastrulation
	IV	3	III	Development of eye, ear
October	I	3	IV	Puberty, Menstrual cycle, Menopause and their psychological aspects
	II	3	IV	Classification of placenta
	III	3	IV	Hormonal changes in pregnancy, parturition + lactation, Contraception
	IV	3	IV	Merits & Demerits of birth control, Super ovulation, AI, IVF, Test tube babies, Cryopreservation
November	I	3	V	Embryo transfer, Amniocentesis, Bioethics

TEACHING METHODOLOGY		LEARNING RESOURCES	EVALUATION
ONLINE	OFFLINE		
Video, PPT, G. meet		Verma & Agarwal, Rastogi, Arumugam	Padlet
"		Rastogi, Arumugam	Quiz
"	Mind Map	Verma & Agarwal, Rastogi	Diagram
PPT, G. meet		Berry, Rastogi	Home Test
PPT, G. meet		Berry, Rastogi, Verma & Agarwal, Usha Gupta	Recall
PPT, video, G. meet		Arumugam, Rastogi, Verma	Objective Test
	Mind Map + Home test	Arumugam, Rastogi	written Test
PPT, G. meet		Rastogi, Verma & Agarwal	Quiz
Video, PPT		Verma & Agarwal, Rastogi	Objective Test
PPT, video	written Test	Rastogi, Balinsky, Verma & Agarwal	written Test
Board, PPT	Diagram	Rastogi, Balinsky, Arumugam	Home test
PPT, video	Mind map	Gynecology - Shaw	Objective Test
PPT, video	Diagram	Berry, Balinsky	written Test
PPT	Home Text	Gynecology - Shaw	Quiz
Discussion			
PPT, G. meet	Mind map	Sathyanarayana, Rastogi	Objective
PPT, G. meet		Sathyanarayana	written Test

Shaw

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SEMESTER V & VI - UCZOL17 - CORE PRACTICAL III

COURSE INSTRUCTOR : Dr. N. Uma Chandra

Month	Week	Hour	Topic
July	III	1	Egg, Honey, Lac, Silk, Pearl, Hide & Leather
	IV	1	Tilapia, Anabas, Shark, Catla
August	I	1	Chandrasekhar, Rearing Tray
	III	1	Rearing Stand, Honey extractor
	IV	1	Smoker, Modern Hive
September	I	1 st	Detection of nitrogenous waste products
	III	1 st	Frog 4 cell, 8 cell and 32 celled stages
	IV	2 nd	Blastula, Gastrula, chick - 18, 24, 48 hrs
October	I	2 nd	T.S. of Testis and ovary, Human ovum & sperm
	II	2 nd	Placenta - Sheep, Human, Yolk sac Placenta of shark
	III	2 nd	Kymograph, Respirometer
	IV	2 nd	Differential count of WBC
November	I	2 nd	Human Salivary Amylase Activity in relation to pH
	II		Human Salivary Amylase Activity in relation to temperature
	III		Estimation of Haemoglobin - Sahli's method
	IV		Oxygen consumption in fish with reference to body weight

Physiology, Developmental Biology and Economic Zoology

Teaching Methodology	Learning Resources	Evaluation
Study Material - offline	Notes	Quiz
offline - Photocopies	Notes	Diagram
Photocopies		Diagram
"		Diagram
"		Diagram
Google meet	Study Material	Recall
offline	Photocopies	Objective type
offline	Study Material	Multiple choice
offline	Study Material	Home test
G. meet & offline	PPT, Notes	Quiz
offline	Notes	Written Test
G. meet	Study Material	Quiz
		Home test
		Written Test
		Quiz
		Written Test

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SEMESTER-IV PCZ0117 - APPLIED ENTOMOLOGY

COURSE INSTRUCTOR: Dr. N. Uma chandeva

Max. Marks 60+60 Hours 2+1/week Credits:

Month	Week	Hrs. Unit	Topic	Teaching Methodology	Learning Resources	Method of Evaluation
January	I	2	II Insect pest of domestic animals - cattle - Cattle fly. Ox - warble fly.	chalk and board	C.L. Metcalf, W.P. Flint	Recall
	II	1	II Chicken flea	PPT	- Destructive and useful Insects	"
	III	2	II Shaft Louse, Sheep and Goat - Head Maggot	"	Vasantharaj David	Home test
	IV	1	II Sheep ked	"	"	"
February	I	2	II Biting louse - Insect vectors of animals - Mites.	"	"	Objective
	II	2	III Ticks.	"	"	"
	III	2	IV Classification of Insecticides - Chemical Nature - Inorganic - Arsenic and Fluorine Compounds.	"	David B.V. Harmful and Beneficial Insects.	Quiz
	IV	2	IV Organic compounds - Animal origin - Nereistoxin, Plant origin - Nicotinoids, Pyrethroids, Rotenoids, Hydrocarbons.	"	"	Written Test
March	I	2	IV Synthetic organic compounds - DDT, BHC	"	"	Recall
	II	2	IV Parathion - Mode of action - Physical Poison, Protoplasmic Poison, Respiratory Poison	"	"	Written Test
	III	2	IV Nerve Poison - Mode of entry - Stomach poisons	"	"	"
	IV	2	IV Contact Poison, Fumigants.	"	"	"
April	I	2	V Biological control of Plant pest - Viral Insecticide	"	Tomar B.S. - Introduction to Economic Zoology	Quiz
	II	2	V Bacterial insecticides, Fungal Insecticides.	"	"	Written Test
	III	2	V Integrated Pest Management.	"	"	"

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SEMESTER IV - UCZ0217 - GENETICS + EVOLUTION

Hours: 3+1/week Credit: 4 Max. Marks 40+60

COURSE INSTRUCTOR: Dr. N. Uma Chandra

Month	Week	Hrs	Unit	TOPIC	TEACHING METHODOLOGY	LEARNING RESOURCES	EVALUATION
January	I	2	III	Introduction	Google Meet	Verma + Agarwal, Meyyan	Recall test
	II	1	III	Chromosomal aberrations	"	"	"
	III	2	III	Genetic disorders - chromosomal autosomal - Down Syndrome	"	"	"
	IV	2	IV	Sex chromosomal - Turner's and Klinefelter's Syndrome	"	Ahora	Quiz
February	I	2	III	Inborn errors in Metabolism - Phenyl alanine Metabolism	"	Gopalakrishnan	Oral test
	II	2	III	Gene Mutation	"	Verma + Agarwal	Objective
	III	2	III	Chromosomal aberrations	"	"	Home test
	IV	2	IV	Applied Genetics: Population genetics - Hardy Weinberg Law	"	"	Recognition
March	I	2	IV	Gene Frequency, Factors affecting gene frequency	"	Verma + Agarwal	Oral test
	II	2	IV	Pedigree Analysis, Euthenics	"	"	"
	III	2	IV	Eugenics	"	Gopalakrishnan, Ranganathan	Objective
	IV	2	IV	Euphenics	"	"	"
April	I	2	V	Theories of Evolution - Lamark	"	Arumugam - Organic Evolution	Recall
	II	2	V	Darwin, Mimicry, Isolation	"	Sanjib, Bhatgi, Meyyan	Quiz
	III	2	V	Speciation: Evolution of Man	"	Gopalakrishnan, Ranganathan	Home test

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SEMESTER VI UCZOJ17 - BIOTECHNOLOGY

COURSE INSTRUCTOR: Dr. N. Uma Chandra

Hours: 4/wk Credit: 4

Month	Week	Hrs	Unit	Topic	Teaching Methodology	Learning Resources	Evaluation
January	I	3	I	Biotechnology- Introduction, Scope and Importance	Lecture	Sathyanarayana	Mind map
	II	3	I	Definition, branches of Biotechnology, DNA structure			
	III	3	I	Introduction to Genetic Engineering			
	IV	3	II	Gene cloning strategies - Restriction Endonucleases	Black Board	Kumerasan	Oral tests
February	I	3	II	Cloning vectors - Plasmids - pBR322, Bacteriophage	Lecture	Kumerasan, Dubey	Quiz
	II	3	II	Lambda Phage, Cosmids, YAC	PPT		Objective test
	III	3	III	Ligases, Linkers and Adaptors			
	IV	3	III	rDNA Technology - Construction of rDNA, Gene Transfer Mechanism - Transformation, Transfection		Gupta	
March	I	3	III	Microinjection, Electroporation, Biolistics, Colony &	Lecture, PPT		Home test
	II	3	III	Plaque Hybridization, Sanger's Method of DNA seq.		Prakash	Quiz
	III	3	III	cDNA Library, Blotting techniques - Southern, Western			
	IV	3	IV	Northern Techniques, PCR & its Application			
April	I	3	IV	Animal cell culture - Definition, Requirement, Equipment	Lecture		Objective
	II	3	IV	Culture Media, Primary & Secondary cell culture Monolayer culture, Suspension culture, Methods of culture			
	III	3	V	Applications of Genetic Engineering in Medicine, Agriculture, Industry, SCP, GMO, Transgenic fish and sheep, Introduction to Databases - genbank, EMBL, DDBJ	PPT	Gupta, Sathyanarayana, Rama Dubey	Quiz

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Academic Year 2020-2021

III B.Sc ZOOLOGY

Physiology UCZOD17 & CORE PRACTICAL IV

<u>Week</u>	<u>UNIT</u>
<u>JULY</u>	
2	INTRODUCTION <u>PRACTICAL</u> : SPOTTERS [25 MIN] (25)
3	DIGESTION <u>PRACTICAL</u> : SPOTTERS [BENTHE PREPARATION] (25)
4	ABSORPTION <u>PRACTICAL</u> : ROCK SHORE SPOTTERS (25)
5	METABOLISM <u>PRACTICAL</u> : SANDY SHORE SPOTTERS (25)
<u>AUGUST</u>	
2	CENTRAL PATHWAY <u>PRACTICAL</u> : PLANKTONS (1 HR) (1)
3	CARBOHYDRATE METABOLISM <u>PRACTICAL</u> : PLANKTON - MARINE (1)
4	PROTEIN METABOLISM <u>PRACTICAL</u> : FLYING ADAPTATION (1)
5	LIPID METABOLISM <u>PRACTICAL</u> : OBSERVATION (1)
<u>August</u> AUGUST	
1	INTRO - CIRCULATION <u>PRACTICAL</u> : BIOZOOLOGY (1)
2	RESPIRATION SPOTTERS <u>PRACTICAL</u> : OBSERVATION (1)
3	EXCRETION <u>PRACTICAL</u> : MICROBIOLOGY SPOTTERS (1)
4	MUSCLES <u>PRACTICAL</u> : OBSERVATION. (1)
<u>SEPTEMBER</u>	
2	FUNCTIONS OF MUSCLES <u>PRACTICAL</u> : IMMUNOLOGY SPOTTERS (1)
3	NERVOUS SYSTEM <u>PRACTICAL</u> : OBSERVATION (1)
4	VISION & HEARING <u>PRACTICAL</u> : REVISION (1)
5	ENDOCRINE SYSTEM <u>PRACTICAL</u> : OBSERVATION (1)

UNIVERSITY MODEL OF TEACHING

SEMESTER, CDD: I + II

COURSE INSTRUCTOR: DR. ANMARIY AGNES

<u>WEEK</u>	<u>UNIT</u>
<u>OCTOBER</u>	
2	PRIMAR. THYROID <u>PRACTICAL</u> : ESTIMATION (1)
3	PARA THYROID, ADRENAL <u>PRACTICAL</u> : OBSERVATION (1)
4	SEX HORMONES <u>PRACTICAL</u> : OBSERVATION (1)
<u>SEMESTER III II B.Sc ZOOLOGY - UCZOD17 - CELL BIOLOGY & BIOZOOLOGY</u>	
<u>HRS/week (1HR)</u>	<u>WEEK (1HR/week)</u>
<u>JULY</u>	
2	INTRODUCTION (1)
3	CELL THEORY (1)
4	CELL STRUCTURE - PRO (1)
5	PROKARYOTES (1)
<u>AUGUST</u>	
2	EUKARYOTES CELL (1)
3	ANIMAL CELL & PLANT CELL (1)
4	DIFFERENCE BETWEEN MITOSIS & MEIOSIS (1)
5	MITOSIS & MEIOSIS (1)
<u>August</u> AUGUST	
1	MEIOSIS (1)
2	CELL CYCLE (1)
3	PLASMA MEMBRANE (1)
4	STRUCTURE & MODELS (1)
<u>SEPTEMBER</u>	
1	FUNCTION & SPECIALISATION (1)
2	PROTEIN SYNTHESIS (1)
3	PROTEIN SYNTHESIS (1)
4	LAC OPERON (1)
<u>OCTOBER</u>	
1	LAC OPERON (1)
2	REVISION. (1)

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M.Sc. Zoology

SEMESTER: III LIMNOLOGY AND TOXICOLOGY

CODE: ZC20311 ONLINE MODE OF TEACHING

Week (1st/2nd)

UNIT

JUNE

1
2
3
4
5
6
7
8
9
10
11
12

Introduction - scope
Types of freshwater habitats
Lentic - ponds, lakes.
Lotic - Rivers.

JULY

1
2
3
4
5
6
7
8
9
10
11
12

Light & Temperature.
Radiation. Heat Budget
Dissolved solids.
Turbidity

Dissolved gases.
Planktons.
Phyto planktons.
Zooplanktons.

AUGUST

1
2
3
4
5
6
7
8
9
10
11
12

Adaptations.
Adaptation of zoos
General adaptation
Revision.

SEPTEMBER

1
2
3
4
5
6
7
8
9
10
11
12

Student PPT Presentations
PPT Presentations
PPT Presentations.

M.Sc. Zoology

SEMESTER: III ENVIRONMENTAL BIOLOGY

CODE: ZC20117 ONLINE MODE OF TEACHING

COURSE INSTRUCTOR: DR. AMARY ANES

Week / Month

UNIT

JUNE:

Environmental indicators

JULY:

Bioaccumulation

AUGUST:

Bio remediation.

SEPTEMBER

PHYTOREMEDIATION

OCTOBER

APPLICATION OF BIOREMEDIATION

REFERENCES AND STUDY MATERIALS GIVEN.

1. PHYSIOLOGY: ① Animal physiology by Verma Aggarwal.
② Anatomy & Physiology by Tortora
③ Anatomy & Human Physiology by Guyton.
④ Animal physiology by ~~Verma~~ Foramskumar
⑤ Biochemistry by Jain.
⑥ Fundamentals of Biochemistry by Ambika Sharmo - gem
- ② Limnology: ① Limnology by Alexander Horne
② Limnology by Chole.
③ Fundamentals of Ecology by Odum.
④ Lakes by
- ③ CELL BIOLOGY: ① Cytology by Verma Aggarwal
② Cell by Bruce.
③ Microbiology by P. O. P. R.
- ④ ENVIRONMENTAL BIOLOGY (P.G.):
① Fundamentals of Ecology by Odum.
② Ecology by Dash.
③ Ecology by P. D. Sharma.
④ Toxicology. OER

References from OER are used for all the subjects.

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Programme: B.Sc
 Programme code: 33
 Semester 3rd

Course: Elective I A Economic Zoology
 Course code: UEZ0A7
 Credits: 5

Hours 5 Total hours 15
 Max marks 60+40.

Course Instructor: Ms. Rebecca Vindla

Week/Date	No. of Hours	Unit portions to be covered	Learning Resource	Teaching Methodology	Method of eval Plat form - nature online / offline
July <u>I</u>	5	<u>I</u> Introduction - culture methods equipments - products - disease and control measures in Apiculture.	Shukla G's and Upadhyay SP Economic Zoology	Google meet Google classroom Videos, PPT Live board.	Offline - quiz and Assignment.
<u>II</u>	5	<u>I</u> Sericulture	Shukla - Economic zoology	Google meet Give board.	Google class room Quiz
<u>IV</u>	5	<u>I</u> Vermiculture	shukla - Economic zoology	Google meet Video PPT	Google class room
<u>IV</u>	5	<u>I</u> Lac culture	Shukla - Economic zoology	Google meet	Google class room
August <u>I</u>	5	<u>II</u> Aquaculture - fresh water management - Seed collection - Culture techniques.	Shukla - Economic	Video PPT	Google class room
<u>II</u>	5	<u>II</u> Edible fishes equipments nets and traps - by products of fishing industry -	Shukla - Economic zoology.	Google meet	Google class room - Assignment.
<u>II/III</u>	5	<u>II</u> Diseases of fishes and prawn.	Shukla - Economic zoology.	Offline - Google class room.	Assignment.
<u>III</u>	5	<u>II</u> Marine fish culture prawn. culture and pearl culture	Shukla - Economic zoology.	Google meet	Quiz
<u>IV</u>	5	<u>III</u> Poultry Management - breeding fowls Selection of breeds fowl house - types of rearing feeds	Shukla Economic zoology	Offline - Google class room	Assignment.
September <u>I</u>	5	<u>III</u> Poultry products - preservation of eggs by - products of egg.	Shukla - Economic zoology	Google meet	Assignment.

11/11	5	11/11	Disease of fowl and control - Poultry industry and by products	Shukla Economic zoology Prakash - Economic zoology	Google class room - offline.	Written Assignment.
12/1	5	12/1	Dairy farming - breeds of milch animals - feeds - disease and control	Tomas - Introduction to Economic zoology	Google class room - offline.	Quiz Assignment - Google class room.
October 11	5	12/1	Leather Industry - processing of leather - tanning - oil and chrome tanning - finishing.	Shukla Economic zoology	Google meet Video live board.	Assignment Google class room
11	5	12/1	wool - properties - processing. fur industry	Shukla Economic zoology	Offline - Google class room	Assignment google class room
11/11	5	✓	Fur bearing animals. Processing of fur and care of fur products.	Shukla Economic zoology	Onmeet live board PPT Video	Assignment
12/1	5	✓	pharmaceutical products from animals.	Shukla Economic zoology.	Onmeet PPT, video	Assignment

Programme: MSc
programme code 23
Semester 111

PE ZOG11: Elective 111 A: clinical
Laboratory Techniques

Total Hours: 2
Max Marks 60+40
Credits: 5

Course Instructor:
Ms. Rebaa Vindia.

July 11	2	11	Haematology - Blood Haemoxis	Medical Laboratory Techniques Mukerjee.	Onmeet PPT Live board.	Google class room Assignment
11	2	11	Collection - capillary and vein puncture Anticoagulants	Mukerjee.	Onmeet PPT Live board.	Online - Share

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IV	2	✓	Basic haematology techniques. TC	Mukerjee, Essential laboratory Tahib	Ameet Video PPT	online
August I	2	✓	DC, PCV		Offline - Google class room.	Assignment
✓	2	✓	ESR, RBC fragility test.	Mukerjee Tahib	Ameet PPT	Discussions
✓		✓	Clotting time, bleeding time, prothrombin time GuD/POD.	Mukerjee Tahib	Offline	Discussions
✓		✓	Blood grouping - platelets and its importance - blood coagulation	Mukerjee Tahib	offline Google class room	Assignment Discussions
Sept ember I		✓	Urine Analysis - physical volume, appearance, colour, odour.	Mukerjee Tahib	Ameet Google class room video	
✓			Microscopic examinations for deposits, RBC, casts, pus cells	Mukerjee Tahib	Live board Offline - Google class room.	Assignment
✓		✓	Biochemical Analysis - Estimation of Sugar, albumin.	Mukerjee Tahib	Ameet PPT	
✓		✓	Bile pigments, bile salts and Ketone bodies	Mukerjee Tahib	Ameet PPT	Google class room - Assignment
October I		✓	Semen Analysis - physical examination; Microscopic examinations.	Mukerjee Tahib	Offline - Google class room	Assignment
✓		✓	motility of sperm - sperm counting Biochemical Analysis	Mukerjee Tahib	Ameet PPT	Discussion

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III/IV	2	III/IV	Vaginal analysis - collection Physical examinations, Microscopic examinations. Biochemical analysis.	Mulkejee Tahib	Ameet PPT Video	Discussion and Assignment - Google class room
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Program: MSc
Programme code: P23

PE20A2II - Elective I A
Biostatistics and
Bioinformatics

Hours: 3
Credit: 5

Semester I
Total marks 60/40
Course Instructor:
Ms. Rebecca Vinolia

October						
II	3	II	Defination - History scope of Bioinformatics.	Bio infor matics by Sharma etal.	Ameet PPT Video	Offline Video - In Google class room.
III/IV	3	III/IV	Databases - primary, Secondary and Tertiary	Sharma	Ameet PPT	Video and discussions
November		II	Database search - Sequence database search BLAST	Sharma	Ameet	
I/II	3		FASTA amino acid substitution matrices (PAM) and BLOSUM		offline	Assignment Google class room.
II	3	II/III	Genomics	Sharma	Ameet PPT	Discussions Assignment
December I	3	II/III	Proteomics	Sharma	Ameet	
		III/IV	Human genome project.	Sharma	Offline	Google class room. Assignment
	3	III/IV	Phylogenetic analysis	Sharma	Ameet PPT	Assignment Discussions
	3	III/IV	Drug designing and Drug targeting.	Sharma	Ameet PPT	Assignment Discussions

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III	3	III	Correlation - types, Methods of correlation - Scattered diagram	Biostatistics Palani Sivammy Anumani	Gmeet PPT	Google class room - Problems
III	3	III	Karl Pearson's Regression - Regression equation and Regression line.			
		III	ANOVA one way Analysis			

Programme: M.Sc PC206120 - Practical I Hours 3			Semester I and II		
Programme Code: P23 Credit -			Total Marks 60+40		
October 3	II	Study of Museum Specimens and Slides relevant to - Structural modifications of Chordata - Hippocampus, Acipenser and Ambystoma.	Ekambaranatha Ayyar Chordata Jorden and V.S Verma.	Gmeet PPT	Offline Google class room - observation

III		Adaptive features for their mode of life Echeris, Hyla and Draco.			
III	3	Giant chromosome - polytene chromosome. a) chironomous larva - slides. b) Lampbrush chromosome chart.	Jorden and V.S Verma. Genetics.	Gmeet PPT	Google class room - Observation note

Novem ber.	I	3	Karyotyping using human metaphase chromosome plate, Identification of syndroms. i) Down Syndrome ii) Klinefelter Syndrome iii) Turner Syndrome.	Jorden and Verma Genetic	Gmeet PPT	Google class room - Observation.
	I	3	Study on Inborn Errors of Metabolism, Chromosome charts	Griffith An Intro duction to genetics.		

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		<p>Lipid Metabolism - Tay Sachs and Niemann pick</p> <p>Protein Metabolism - PKU and Alkaptonuria</p> <p>Carbohydrate Metabolism - Galactosemia and pompe's disease</p>		
1/1	3	<p>Biotechnology and Microbiology.</p> <p>a) <i>Aspergillus</i>, <i>Rhizopus</i>, <i>Pseudomonas</i>, <i>Bacillus</i></p> <p>b) <i>Salmonella</i>, <i>Lactobacillus</i>, <i>Saccharomyces Cerevisiae</i>.</p> <p>c) GM papaya, GM Tomato, Bt cotton, Bt, Brinjal</p> <p>d) Hybridoma Technology</p> <p>e) Transgenic Animals - Fish-Coat</p>	<p>RC Dubey Biotechnology</p> <p>Dr escott Microbiology</p> <p>Paniker - Microbiology</p>	<p>Google class room</p> <p>Observation</p>
December	I	<p>Minor Mounting.</p> <p>Appendages of prawn</p> <p>Sting Apparatus of Honey Bee</p> <p>Mouth parts of housefly, Mosquito cockroach and Honey Bee</p> <p>Brain of Calotes and Honey Fry.</p>	<p>EK Ambaranatha Ayyar - Invertebrata</p> <p>chordata</p>	
	3	<p>Major Dissection</p> <p>Invertebrata - Digestive system of prawn</p> <p>Nervous system of prawn.</p> <p>Digestive system of cockroach</p> <p>Nervous system of cockroach</p> <p>Digestive system of Sepia.</p> <p>Nervous system of Sepia.</p>	<p>Ekambarranatha Ayyar</p> <p>Invertebrata</p>	

Chordata: Cranial nerves of
shark

Arterial system of shark

Molecular Lab Visit

Ekambara
natha -
Ayyar
chordata

Shankar
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Course: B.Sc
 Course code: U33

Course: Environmental Biology
 Course code: UC20K17

Hours: 4
 Credits: 4

Total Hours: 41 Hrs.
 Max. Marks: 40+60
 Course Instructor: Ms. Rebecca

No. of units	units	Topic	Teaching Methodology and Student-centric Method	Learning Resource	Methods of Evaluation Student Centric Methods
4	I	Definition - Branches Autecology Synecology, Integrated - Abiotic factors Temperature	Chalk and Talk PPT	Environmental Biology - P. S. Verma and V. K. Agarwal Animal Ecology and distribution - Rastogi	Quiz Discussion Oral Test
	I	Temperature - Thermal Stratification Range of temperature tolerance Effects of temperature on plants and animals			
4	I	Light - Biological effects of light on plants and animals		Verma Agarwal.	
	I	Water - Types and Properties Soil - Soil profile - Pedogenesis Atmosphere layers and Functions		Verma Agarwal	
4	II	Biotic factors interaction, interspecific animal association	Chalk and Talk PPT		Quiz Home test
	II	Biogeochemical cycle - water, carbon Nitrogen, phosphorus	videos.	Verma Agarwal	Oral test Discussion
4	II	Structure of Ecosystem and functions Energy flow productivity - primary and secondary.		Verma Agarwal	
4	II	Ecological pyramids, food chain and food web. Decomposition and homeostasis		Verma Agarwal	
4	III	Terrestrial Habitat - characteristics of Biome, Tundra, forest, Desert. Freshwater habitat physicochemical nature adaptations of animals in lotic and lentic habitat	chalk and Talk PPT video.	Verma Agarwal	Home test & Discussion Quiz

iv	Maine Ecology - characteristics Zonation and Stratification	Verma Agarwal.	
March	Intertidal zone (Rocky, Sandy and Muddy shore.	Verma Agarwal.	
I	Mangroves.	Verma Agarwal.	Home test Discussion
4	Definition, characteristics - Density Natality, Mortality, Survivorship curves, Age pyramids, carrying Capacity, Fluctuations, Equilibrium population growth, population dispersal.	chalk and Talk PPT Videos	Oral Test.
v	Density dependent factors	Verma Agarwal.	
4	Ecotone and Edge effect, Ecological Succession and community	Verma Agarwal.	
vi	Pollution - causes and control Air, water, Soil pollutions	Ecology Arumugam.	
4	Green House effect, Global warming Acid rains - water treatment	Chalk and Talk PPT Videos.	Home Test Quiz
vii	Depletion of wildlife, Conservation and its Management.	Arumugam.	Discussion Oral Test
4	Red data book, National parks. Wild life Sanctuaries	Arumugam.	

Shree

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Week / Date	No. of Hours	Units	Topic	Teaching Methodology	Learning Resource	Method of Evaluation
January I	3	I	Water quality - temperature - pH, CO ₂ Salinity, nutrients and trace elements for the growth of fishes.	Chalk and Talk	Fishery Biology and Aquaculture - Shanmugam - Pandey -	Discussion
II and III	3	I	Biology of Marine edible fish - Oil Sardines.		Fish and Fisheries	
IV	3	II	Biology of freshwater edible fish - Catla	Chalk and Talk	Ichthyology, Gupta and Gupta.	Discussion Home test
February I	3	III	Indian capture Methods - Shafts Indian capture gears Economic Importance of commercial fisheries		Economic zoology - Shukla	Discussion
II and III	3	III	Sea Weeds - Types. Different culture Methods of sea Weeds pearl culture - Stages of pearl formations. pearl culture techniques	Chalk and Talk	Fishery Biology and Aquaculture - Shanmugam.	Dial test.
IV	3	IV	By products of fishes - fish meal Fish oil.	Chalk and Talk	Economic zoology - Shukla.	Discussion Quiz Home test
March I	3	V	Fish manure - Chunks. Methods of processing	Chalk and Talk	The Rural Marketing	Discussion
II	3		Packing - Storage of fishes Transport facilities.		Book - Pradyip	Dial Test Quiz
III	3		Marketing channels and E-marketing.			Quiz

Programme: M.Sc
 Programme code: P23
 Semester - II

Course: Biodiversity and wildlife Conservation
 Course code: PCZO F20

Hours: 3
 credits: 4

Total Hours 6
 Max Marks 40+60
 Instructor Ms. Rebecca

Week/Date	No. of hours	Units	Topic	Teaching Methodology/Student Centre Methods	Learning Resource	Method of Evaluation/Student centric Methods
January I	3	II	Values of bio diversity: Consumptive use, productive use, social Ethical and aesthetic value.	chalk and Talk	Tentbook of wildlife Management SK Singh.	Discussion Q&A
IV	3		Hot spots of biodiversity	chalk and Talk	Environmental Studies - Sharma.	Oral Test Discussion
Feb I	3		Endemic and Invasive species	PPT.		
I	3		Threats to biodiversity: Habitat Loss.			
II	3		Climate change: poaching	PPT		
	3		Man and wildlife conflicts	Videos chalk and Talk		Discussion
IV and V	3	III	wildlife of India	Chalk and Talk	SK Singh.	Written Test
	3		Values of wildlife - positive and negative			
March I	3		Morphological and physiological adaptations of Endangered and threatened species	Video PPT chalk and Talk	E-Resources Arora.	Discussion
II	3		Population dynamics: Exponential and Logistic.		Sharma.	Oral Test Discussion
	3		Local and Regional Extinction		Ecology Arora.	
III	3	IV	Wildlife protection Act	PPT	SK Singh.	Discussion
	3		In-situ and ex-situ conservation	chalk and Talk	SK Singh.	Home tests
	3		IUCN Red list CITES			

XV

3

XVI

National parks and Sanctuaries
Biosphere reserves
Project Tiger - Project Cheetah
and Ghoradla breeding project.

PPT
chalk
and
Talk

SK Singh
Ecology -
Arora

Discussion
Oral Test
Quiz

Share

Share
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LESSON PLAN FOR ODD SEMESTER, 2020-2021

SEMESTER - II, II B.Sc. ZOOLOGY

Platform: Google Meet
Google class room

COURSE INSTRUCTOR: VIDHYA.K

UCZOD17: CELL BIOLOGY AND BIOINSTRUMENTATION

MONTH + WEEK	HOUR	UNIT	TOPICS TO BE COVERED	TEACHING METHODOLOGIES		LEARNING RESOURCES	EVALUATION
				ONLINE	OFFLINE		
July II	2	IV	Microscopy	PPT, Video	Notes, Video	Veerakumari, Agarwal	Oral test
July III	2	IV	Compound Microscope	PPT, Video	Notes, Video	Veerakumari, Agarwal	Q & A
July IV	2	IV	Transmission Electron Microscope	PPT, Video	Notes, Video	Veerakumari	Assignment + MCQ
August I	2	IV	Scanning Electron Microscope	PPT, Video	Notes, Video	Veerakumari	Assignment + MCQ
August II	2	IV	centrifugation	PPT, Video	Notes, Video	Veerakumari	Diagram test
August III	2	IV	Ultra centrifuge	PPT, Video	Notes, Video	Veerakumari	Home test
August IV	2	IV	Differential Centrifugation	PPT, Video	Notes, Video	Veerakumari	Q & A Test.
Sept I	2	IV	cell Homogenization and Fractionization	PPT, Video	Notes, Video	Veerakumari	Test
Sept II	2	V	chromatography	PPT, Video	Notes, Video	Veerakumari	Assignment
Sept III	2	V	Paper chromatography	PPT, Video	Notes, Video	Veerakumari	Test
Sept IV	2	V	Thin Layer chromatography	PPT, Video	Notes, Video	Veerakumari	Test, Quiz
October I	2	V	Column chromatography	PPT, Video	Notes, Video	Veerakumari	Quiz
October II	2	V	Electrophoresis	PPT, Video	Notes, Video	Veerakumari	Assignment
October III	2	V	Gel Electrophoresis	PPT, Video	Notes, Video	Veerakumari	Test
October IV	2	V	SOS-PAGE gel Electrophoresis	PPT, Video	Notes, Video	Veerakumari	Test
Nov I	2	V	Disc gel Electrophoresis	PPT, Video	Notes, Video	Veerakumari	Test
Nov II	2	V	Revision				

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Month & Week	Hour	Unit	TOPICS TO BE COVERED	TEACHING METHODOLOGIES		LEARNING RESOURCES	EVALUATION
				ONLINE	OFFLINE		
July II	3	II	Dispersal	ppt	Notes	E-Notes, Agarwal	Quiz Q+A
July III	3	II	Environmental signals	ppt	Notes	Agarwal	Assignment
July IV	3	II	Instinct and Imprinting	white board, Pen	Assignments	Agarwal	Seminar
August I	3	II	Theories of Habitat selection	ppt, Video	Notes, Video	Agarwal	Seminar
August II	3	II	Foraging Methods	interactive method	Notes	Agarwal	Seminar
August III	3	III	Foraging Theory	interactive method	notes, G-Suit	Agarwal + e notes	Seminar
August IV	3	III	Foraging and Social Behaviour	white board method	Notes, G-Suit	Agarwal	assignment
Sept I	3	III	Techniques for Habitat Selection	white board, Pen	notes, G-Suit	Agarwal	Assignment
Sept II	3	III	Modifying food supply	white board & Pen	Notes, G-Suit	Agarwal	Seminar
Sept III	3	IV	Anti-Predatory behaviour	white board & Pen	Notes, G-Suit	Agarwal	Seminar
Sept IV	3	IV	Individual strategies - Escaping, freezing, deception, toxicity, mimicry, distraction, display	white board + Pen	notes, G-Suit	Agarwal	Assignment
October I	3	IV	Social Strategies	white board & Pen	G-Suit, Notes	Agarwal	Assignment
October II	3	IV	Host parasite relation, individual behaviour	white board & Pen	G-Suit, notes	Agarwal	Assignment
October III	3	IV	Conflict and Aggression	white board & Pen	G-Suit, notes	Agarwal	Assignment
October IV	3	V	Communication in animals - types	white board & Pen	G-Suit, notes	Agarwal	Test
Nov I	3	V	Sound call alarm calls, Sonar in bats	white board & Pen	G-Suit, notes	Agarwal	Test
Nov II	3	V	Neurobiology of Bird Song, language acquisition by Humans and Apes.	white board & Pen	G-Suit, notes	Agarwal	Test

Month & Week	Hour	Unit	TOPICS TO BE COVERED	Teaching Methodologies		Learning Resources	Evaluation
				ONLINE	OFFLINE		
July II	2	I	Construction of Home aquarium	ppt, Video	Notes	GCR Notes, ppt, Video	MCR
July III	2	I	Material used - wooden and metal frames, sealants and gums, design and construction	ppt, Video	notes	Dept. Course manual	MCR
July IV	2	I	of Aquarium tanks.	ppt	Notes	Course manual	Q+A
August I	2	I	Accessories used - Aerators, Filters, Heaters	white board & Pen	Notes, G-Suit	Course manual	Assignment
August II	2	I	Thermostat, Handnets, gravel Pebbles, objects	white board & Pen	Notes, G-Suit	E-Notes	Quiz
August III	2	II	Aquarium Plants	ppt, Videos	notes, G-Suit	Course manual	Assignment
August IV	2	II	Nutritional requirement, kinds of feeds.	white board & Pen	notes, G-Suit	Course manual	Home test
Sept I	2	II	live feeds, Artificial feeds, feed formulation.	white board & Pen	notes, G-Suit	Course manual	Test
Sept II	2	II	Balanced diet, culture of live feeds.	white board & Pen	notes, G-Suit	Course manual	Assignment
Sept III	2	III	Popular Ornamental fishes - live bearers Red sword tail, Guppy, Molly.	ppt, Videos	notes, G-Suit	E-Notes, Video	Assignment
Sept IV	2	III	Egg layers - Gold fish, siamese fighting fish Gourami, Angel, Oscar	ppt, Videos	notes, G-Suit	Jayashree, e-notes	Assignment
October I	2	III	Néon Tetra, Discus fish, Fish Handling.	ppt, Videos	notes, G-Suit	Course manual	Assignment
October II	2	IV	Aquarium maintenance	white board & Pen	notes, G-Suit	Course manual	Assignment
October III	2	IV	Common Diseases diseases of Marine fishes	white board & Pen	notes, G-Suit	Course manual	Assignment
October IV	2	IV	Other marine Organism	white board & Pen	notes, G-Suit	Course manual	Q+A
Nov I	2	V	Budget for commercial scale, loan availability	white board & Pen	notes, G-Suit	E-Notes, Course manual	Assignment.
Nov II	2	V	Credit Policies - Export Potentials.	white board & Pen	Notes, G-Suit	E-notes, Course manual	Assignment.

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MONTH & WEEK	HOUR	UNIT	TOPICS TO BE COVERED	Teaching methodologies		Learning Resources	Evaluation
				ONLINE	OFFLINE		
Sept II	3	I	Hormonal changes of Puberty, Mechanism of Genetic Transmission. Prenatal Periods	Video, collaborative method	Notes, Video	Course manual Dept. Course manual	MCA Assignment
Sept III	3	I	Physical, Psychological maternal stress, Pregnancy, maternal body changes.	White board & Pen	Notes in HR	Dept. Course Manual	Assignment
Sept IV	3	II	Growth and development stages - Influence of Heredity and environment.	White board & Pen	Notes in HR	Dept. Course Manual	Assignment
October I	3	II	Physical Growth during Infancy, Early childhood, Late childhood.	White board & Pen	Notes	Course manual	Assignment
October II	3	II	Motor development - Gross and fine motor skills.	White board & Pen	Notes	Course manual, e-notes	Assignment
October III	3	III	Growth and development - Sensorimotor stage, Pre, Operational and Post levels.	White board & Pen	Notes	Course manual	Assignment
October IV	3	III	Self-Understanding and Identity. Piaget's theory, Dollard & Miller's learning, Bandura & Water's theory.	Lecture, PPT	Notes	Course manual, e-notes	Assignment
Nov I	3	IV	Emotions in Babyhood, Early and late childhood. Emotional Problems of childhood.	Discussion, Lecture	Notes	Course manual	Assignment
Nov II	3	IV	Moral development, Psycho-social development.	White board & Pen	Notes	Course manual, e-notes	Assignment
Nov III	3	V	Gifted children - Needs, Problems, Identification and Education. Mental Retardation - types, causes and Prevention	White board & Pen	Notes	Course manual	Assignment
Nov IV	3	V	Identification Backward children - kinds, causes + Education.	White board & Pen	Notes	Course manual	Assignment

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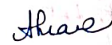
LESSON PLAN FOR EVEN SEMESTER, 2020-2021

PCZOL17- RESEARCH METHODOLOGY

COURSE INSTRUCTOR : VIDHYA. K

SEMESTER
II
M.Sc., ZOOLOGY

MONTH & WEEK	HOURS	UNIT	TOPICS TO BE COVERED	TEACHING METHODOLOGY	LEARNING RESOURCES	EVALUATION
Jan I	3	II	Principle and application of chromatography - Column, Gel	chalk and Talk method,	1) Research methodology	- Assignment
Jan II	3	II	Affinity, HPLC, GLC	ppt method,	a) Gmurmani	- Quiz
Jan III	3	II	Gel Electrophoresis- Agarose, SDS, PAGE	Videos,	b) Kotpal	- MCQ
Jan IV	3	II	Application of Radioactive Isotopes in biology.	Lecture + interaction method,	2) Bioinstrumentation	- Oral Test
Feb I	3	II	Immunoelectrophoresis - PEG, Autoagglutination	Discussion method.	- Veerakumari	- Written Test
Feb II	3	II	Centrifugation - Principle, Ultracentrifugation			
Feb III	3	IV	Counting Methods - GM, scintillation Counter			
Feb IV	3	IV	Research Design - meaning, needs, important concepts related to research design.			
March I	3	IV	Sampling Design - characteristic, types.			
March II	3	IV	Research methods - Survey, experimental, Explanatory.			
March III	3	IV	Case study, selection of tools - Criteria, types.			
March IV	3	IV	Criteria of good research tool, Preparation of research paper.			
April I	3	V	Reference collection - Preparation of thesis.			
April II	3	V	Preparation of scientific paper for publication in a journal.			


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LESSON PLAN FOR

UGZDAB17 - NME

EVEN SEMESTER 2020-2021, VI SEMESTER

MATERNAL & CHILD PSYCHOLOGY

COURSE INSTRUCTOR: VIDHYA.K

MONTH & WEEK	HOURS	UNIT	TOPICS TO BE COVERED	TEACHING METHODOLOGY	LEARNING RESOURCES	EVALUATION
January, I	3	I	Hormonal changes of Puberty, Mechanism of Genetic Transmission.	Chalk and Talk method	Dept. Course Manual on Maternal and Child Psychology. Web - lecture Notes. Dr. J.S. AROCKIAMARY, M.Sc., Ph.D. Associate Professor & Head P.G and Research Dept. of Zoology Auxilium College (Autonomous) Vellore - 632 006.	Assignment - Quizzy - MCQ - Oral Test - Written Test
January, II	3	I	Prenatal Periods, Maternal stress, Pregnancy, Maternal body changes.	Interaction method ppt method		
Jan, III	3	II	Growth and development stages - Influence of Heredity and environment.	VidBs, Lecture method		
Jan, IV	3	II	Physical Growth during Infancy, Early childhood, Late childhood	Discussion method		
Feb, I	3	II	Motor development - Gross and fine motor skills.			
Feb, II	3	III	Growth and development - Sensorimotor stage, Pre-operational stage and Post operational stage.			
Feb, III	3	III	Self-Understanding and Identity, Roger's Self theory, Dollard + Miller's theory.			
Feb, IV	3	III	Bandura + Walter's theory.			
March, I	3	IV	Emotions in babyhood, Early childhood and Late childhood. Problems of childhood.			
March, II	3	IV	Moral Development, Psycho-social development.			
March, III	3	V	Gifted children - Needs, Problems, Identification and Education.			
March, IV	3	V	Mental Retardation - types, causes and Prevention of Mental retardation.			
April, I	3	V	Backward children - kinds, causes and Education for Backwardness.			

COURSE INSTRUCTOR: VIDHYA.K

LESSON PLAN FOR EVEN SEMESTER 2020-2021, VI SEMESTER

USZO0617 - SBE ANIMAL BEHAVIOUR (SBE)

III B.Sc., ZOOLOGY

MONTH & WEEK	HOUR	UNIT	TOPICS TO BE COVERED	TEACHING METHODOLOGY	LEARNING RESOURCES	EVALUATION
Jan, I	2	I	Introduction to Behaviour, Branches of Ethology.	Chalk and Talk method	Dept. course manual on Animal Behaviour	- Assignment - Quiz
Jan II	2	I	Types of Studying behaviour - in Lab	Interactive method	Animal Behaviour	- MCQ
Jan. III	2	I	Studying behaviour in Wild, types of studies chronology.	PPT and videos	2) Environmental Biology by Veema Agarwal.	- Oral Test - Written Test.
Jan, IV	2	I/II	Rhythms, Sleep, Biological clock.	Lecture method.		
Feb, I	2	II	Modes and methods of communication			
Feb II	2	II	Locomotion, Foraging			
Feb III	2	II	Catching, Memory, Homing			
Feb IV	2	III	Migration, Territorialism, Play.			
March, I	2	III	Courtship, Parental care, Learning			
March, II	2	III	Innate Behaviour, Neural and Hormonal control of Behaviour.			
March, III	2	IV	Social Behaviour - Aggregation, Schooling			
March, IV	2	IV	Flocking, Herding. Social organization in insects, Advantages.			
April, I	2	V	Abnormal Behaviour - Wild animals under natural conditions and in zoo.			
April II	2	V	Domestic line stock Pet - causes, Prevention. Curing of abnormal Behaviour.			

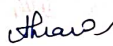
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LESSON PLAN FOR EVEN SEMESTER 2020-2021, IV SEMESTER

ENEVS17 - ENVIRONMENTAL STUDIES

COURSE INSTRUCTOR: VIDHYA.K

MONTH & WEEK	HOURS	UNIT	TOPICS TO BE COVERED	II B.Sc., ZOOLOGY		
				TEACHING METHODOLOGY	LEARNING RESOURCES	EVALUATION
Jan. I	2	I	Definition - Branches, Autecology, Synecology, scope, importance and need for the study of Environmental Studies.	- Chalk and Talk method	Environmental Studies Uac syllabus book.	Assignment Quiz
Jan. II	2	I	The multidisciplinary nature of EVS, Natural resources - Land, Energy, Forest, Wind	- Interaction method - Lecture method - Ppt and videos	Environmental Biology by Veema Agarwal.	MCQ Oral Test Written Test.
Jan. III	2	II	Mineral resource, Food, Water, Alternative energy, Need for (role) individuals to conserve.			
Jan. IV	2	II	Ecosystem, Structure and functions of Ecosystems - Food chain, Web, Pyramids.			
Feb. I	2	II	Types of Ecosystem - Forest, Grassland, Desert			
Feb. II	2	II	Ocean Ecosystem, Energy flow in a Ecosystem, Pond, Lake Ecosystem,			
Feb. III	2	II/III	Ecological succession, Biodiversity - General terms related biodiversity.			
Feb. IV	2	IV	India as a mega diversity zone, Threats to Biodiversity,			
March I	2	III/IV	Values of Biodiversity, Air Pollution, Water Pollution			
March II	2	IV	Soil Pollution, Noise Pollution - control Measures, Rainwater Harvesting, Wasteland, Solid Waste Management.			
March III	2	V	Population - Environmental Acts - International & National agencies, Air Act 1981, Water Act 1976.			
March IV	2	V	Wildlife Protection Act 1972, Forest Act 1980, Global Warming, climatic change, ozone depletion.			
March V	2	V	Acid rain, Sustainable development, Population explosion, Role of IT in Environment conservation.			


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Programme : MSc., Zoology

Course : Environmental Biology

Programme code: 23

Course Instructor: Dr. K. ANU

MONTH

WEEK/DATE

Semester : III

Hours : 2

Total hours : 90hrs

MONTH	WEEK/DATE	Total hours	Hours	Topic	Method	Reference	Assessment
JULY	I	2	1	Ecological succession. Introduction	PPT	Basic Ecology - Odum	Home test
	II	2	1	Process of ecological succession	PPT	"	Home test
	III	2	1	Patterns of ecological succession	PPT	"	Home test
	IV	2	1	Patterns of ecological succession	PPT	"	Home test
AUGUST	I	2	1	Human influence on succession	PPT	Ecology of Environment - Sharma	Home test
	II	2	1	Homeostasis	PPT	"	Home test
	III	2	1	Radio active compounds	PPT	Environmental Pollution - Sharma	Home test
	IV	2	1	Radio active compounds impact on the environment	PPT	"	Home test
SEP	I	2	1	Radio active compounds impact on the environment	PPT / study material	Environmental Biology - Prasad	Home test
	II	2	1	Global climate pattern	PPT / study material	"	Home test
	III	1/1	1	Atmospheric ozone	PPT / study material	Basic Ecology - Odum	Home test
	IV	1/1	1	Ozone depletion	PPT / study material	Environmental Pollution - Sharma	Home test
OCT	I	1/1	1	Ozone depletion - coping with climatic variation	PPT / study material	Environmental Pollution - Sharma	Home test
	II	1/1	2	Green energy - bio-fuels	PPT / study material	Environmental Pollution - Sharma	Home test
	III	1/1	2	Recycling and reuse technologies	PPT / study material	"	Home test
	IV	1/1	2	Liquid waste management	PPT / E-content	Pollution Control Engineering - Rao D.S	Home test
NOV	I	1/1	2	Solid waste management	PPT / E-content	"	Home test
	II	1/1	2	Remote sensing	PPT / E-content	"	Home test

Dr. K. ANU
 Associate Professor
 P.G. and U.G. Department of Zoology
 Andhra University
 Waltair - 530 003

Programme code : 23
 Semester : III
 Hours : 6

COURSE : D Molecular biology and Genetics
 MAX MARKS : 40+60
 Course instructor : DR. K. ANU

Month	Week	Hours	Topic	Material	Reference	Assessment
Oct	I	6	1 Structure of DNA, RNA as genetic material, DNA Replication, Genetic Code.	PPT / Study material animation videos	mol. Bio S.C. Rastogi	Home test
	III	6	1 Enzymology of DNA, Events in Replication	PPT / Study material	mol. Bio Foei-felder	Home test
	IV	6	1 methylation in DNA, DNA Repair and clamage.	PPT / Study material	mol. Bio S.C. Rastogi	Quiz
Sep	I	6	2 Structure of RNA and its types RNA transcription, Enzymatic Synthesis	PPT / E-content	Cell. biology - Turner	Home test
	II	6	2 RNA Synthesis - core promoters, Rho-dependent and rho independent	PPT / Study material	Mol. bio Robert - Weaver	Home test
	III	6	2 operan transcriptional control, lac operan and Gal operan	PPT / Study material	Cell and mol. bio - Kodish	Home test
	IV	6	3 splicing. mechanism, branched lariat shaped intermediate, snRNPs	PPT / Study material	Cell. mol biology - Gupta	Home test
NOV	I	6	3 spliceosome, alternative splicing, Self splicing	PPT / Study material	Cell. mol - Gupta	Home test
	II	6	3 RNA group I and II introns splicing, tRNA splicing, Polyadenyla - Mon	PPT / E-content	Cell. mol - Gupta	Home test
	III	6	3 Heterokaryon & translocation Studies Inborn errors of protein, Carbohydrate	PPT / E-content	Cell. mol - Gupta	Home test
	IV	6	3 Inborn errors of lipid, nucleic acid Recombination and its types	PPT / Study material	Mol. Bio - S.C. Rastogi	Home test
Dec	I	6	2 Dosage compensation and x-inactivation	PPT / Study material	An introduction to genetic analysis - Griffiths	Home test
	II	6	2 Genes development and differentiation in Drosophila	PPT / Study material	introduction to genetic analysis - Griffiths	Home test
	III	6	2 Neoplasia - Oncoviruses - Chemical Carcinogenesis	PPT / Study material	Cell. mol / bio - Gupta - Kodish	Home test

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 Vellore - 632 006.

Programme: B.Sc.
 Programme code: 33
 Semester: III
 Course: Sericulture

Course code: VSZOAI7
 Hours: 2
 Credits:
 Max marks: 40+60.
 Course Instructor: Dr. K. ANU

Week/ Hour	Hours	Units			
Sept I	T1	1	Central Silk Board and training Facilities	PPT/ study material	Sericulture - Ganga & Subodhana Home test
II	I	1	Life cycle of silkworm and types of silkworm	PPT/ study material	Sericulture - Ganga Home test
III	1+1	2	Mulberry varieties and its Cultivation - propagation	PPT/ study material	Economic Zoology - Sukla G.S Home test
IV	1+1	2	manuring, pruning	PPT/ study material	Dept. Course manual Home test
I	2	2	Harvesting, Storing of leaves	PPT/ study material	" Home test
II	2	3	Rearing house appliances used for rearing.	PPT/ study material	" "
III	2	4	Rearing operations - Spacing, moulting, mounting & harvesting cocoons	PPT/ study material	" Home test
IV	2	4	Rearing operations - brushing, Feeding, bed cleaning.	PPT/ study material	" "
I	2	5	Cocoon marketing	PPT/ study material	" "
II	2	5	Silkworm diseases and control	PPT/ study material	" "
III	2	5	Defective cocoon varieties	PPT/ study material	" "
IV	2	5	Silkworm diseases and its control	PPT	" "

Shree
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 Valluvar - 632 006

Programme: BSc.,
Code: 33
Semester: IV

COURSE: Sericulture - US20B17
HOURS: 2
max marks: 40+60, Course Instructor: Dr. K. ANU

Week/Date	No. of hrs	Units	TOPICS	Teaching methodology	Learning Resource	Method of evaluation.
JANUARY						
I	2	I	Scope of sericulture in India and global market - Economics	Black board & PPT	Course manual	Home test
II	2	I	Central silk Board - Training Facilities in sericulture	PPT	Course manual	oral test
III	2	I	Types of silkworm, Lifecycle of Bombyx mori	PPT	Course manual	Discussion
IV	2	I	Types of silkworm, Lifecycle of Bombyx mori	PPT	Course manual	Discussion
FEBRUARY						
I	2	II	Varieties of mulberry, Cultivation of mulberry - propagation plantation	PPT	Course manual	Home test
II	2	II	manuring, pruning, Harvesting	PPT	Sericulture - SORA	Home test
III	2	II	Harvesting and storage of leaves.	PPT	Course manual	oral test
IV	2	III	Rearing house, Appliances for rearing, feeding, cleaning.	PPT	"	Home test
MARCH						
I	2	III	spinning, factors for rearing Temperature, humidity.	PPT	"	oral test
II	2	III	Rearing operations - Brushing feeding, Disinfection.	PPT	"	Home test
III	2	IV	Bed cleaning, spacing, moulting	PPT	"	oral test
IV	2	IV	mounting & Harvesting of cocoons	PPT	"	Home test.
APRIL						
I	2	V	Silkworm Diseases, Cocoon marketing.	PPT	"	Home test.

Share

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Vellore - 632 006.

Programme: M.Sc., Zoology

Code: 23

Course: Research methodology

Semester: II

Hours: 3hrs

Max marks: 100, Course Instructor: Dr. K. ANU

Week/Date

No. of hrs

Units

Topics

Teaching methodology

Learning Resources

Method of evaluation.

JANUARY
I

3

I

principles and biological uses of Phase Contrast, Fluorescence microscope

Black board

Bioinstru-mentation - Veerakumar

Oral test

II

3

I

SEM, TEM - electronic microscopic Spectroscopic techniques, Absorption and Emission Spectroscopy.

Black board

"

Home test

FEBRUARY

I

3

I

UV-visible Spectroscopy, X-ray Crystallography, NMR, Fluorescence and Raman Spectroscopy.

Black board

"

Discussion

II

3

III

Scientific goals and method, Research process - criteria of good research

PPT

Kothari

Home test

III

3

III

Criteria of selecting the problem, necessity of defining the problem.

PPT

Kothari

Oral test

IV

3

III

Types of hypothesis - testing of hypothesis and its limitation.

PPT

Kothari

Home test

MARCH

I

3

IV

Research design - meaning and needs of research design and concepts relating to research design.

Black board

Scientific thesis writing - Kothari

Discussion

II

3

IV

Sampling design - steps in sampling design.

PPT

- Kothari

Home test

III

3

IV

Sampling design - characteristic of good sampling design.

PPT

Kothari

Oral test

IV

3

IV

Different types of sampling - Research method - survey, experimental, exploratory - case study.

PPT

Guerrumani

Discussion

APRIL

I

3

IV

selection of tools - ITS types

Black Board


Kothari

Discussion

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Programme	Code	Semester	Week/Date	Nos. of hrs	Units	Topics	Teaching methodology	Learning Resources	Methods of evaluation
M.Sc., Zoology	23	IV							DR. K. ANU
									Research methodology
									4 hrs
									100 hrs
									Course Instructor: DR. K. ANU
									Teaching methodology
									Learning Resources
									Methods of evaluation
January									
I	4	I				Principles and biological uses of Phase contrast, Fluorescence microscope	Black board	Bioinstrumentation - Veerakumari	Oral test
II	4	I				SEM, TEM - electronic microscope spectroscopic techniques, Absorption and Emission spectroscopy	PPT	Net source and Bioinstrumentation	Home test
III	4	I				UV-Visible spectroscopy, x-ray crystallography NMR, Fluorescence and Raman spectroscopy	PPT	Bio-instrumentation - Veerakumari	Discussion
IV	4	III				Scientific goals and method, Research process - criteria of good research	Black board	Research methodology - Gururmani	Oral test
FEBRUARY									
I	4	III				Research problem, criteria of selecting the problem, necessity of defining the problem.	PPT	Kothari	Oral test
III	4	III				Hypothesis - types of hypothesis - testing of hypothesis and their limitations.	PPT	Kothari	Home test
								Scientific	
III	4	IV				Reference work and preparation of dissertation.	Black board	thesis writing - Gururmani	Discussion
IV	4	V				Pubmed, Google scholar and Infliibnet	Black board & PPT	net reference	Discussion
MARCH									
I	4	V				computer aided techniques for data analysis - SPSS software	PPT	Thesis writing - Gururmani	Home test
II	4	V				data presentation.	PPT	"	Oral test


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 Avasthi College (Autonomous),
 Varanasi - 221 008.

M.Sc. Zoology ; P. Code: 23 ; SEMESTER - III ; PRACTICAL III ; PCZ0017
3 hrs/week ; credits = 3 ; Total 45 hrs (online 1 hr; offline 2 hrs)

WEEK	NO. OF HOURS	TOPICS	TEACHING METHODOLOGY		LEARNING RESOURCES	METHOD OF EVALUATION
			ONLINE	OFFLINE		
I	3	Spotters: Environmental Bio	Spotter display	observation Diagrams & notes	1) UNN. science direct. com 2) UNN. fluid system. in 3) UNN. insect. or. JP. 4) Ecology & Ethology by Agarwal & USLE Gupta 5) Fresh water animals of Indian ecological approach by G.T. Tonapi	Test Assignment Quiz group discussion
II	3	Spotters: Limnology & Toxicology				
III	3	Spotters: Animal Behaviour				
IV	3	Spotters				
V	3	Spotters: Lotic Adaptation				
VI	3	Spotters: Lentic Adaptation				
VII	3	Animal behaviour				
VIII	3	visit to water treatment plants - Drinking water	video presentation	Assignment		
IX	3	visit to water treatment plants - Sewage water	Group discussion		6) ENVH Toxicology - Peter Gomes	
X	3	- Tannery Plant.				

NEO	No. of HOURS	TOPIC	TEACHING METHOD		LEARNING RESOURCE	METHODS OF EVALUATION
			ONLINE	OFFLINE		
XI	3	Toxicity Induced diseases	PPT DISCUSSION	TEST & OBSERVATION WORK	1) WWW, Youtube, Com	Test Assignment Quiz Group discussion
XII	3	Toxicity induced diseases	"	"	"	"
XIII	3	Study of sandy shore fauna	"	"	"	"
XIV	3	Study of muddy shore fauna	"	"	"	"
XV	3	Study of Rocky shore fauna	"	"	"	"

M. SC. ZOOLOGY : P. C - 23 ; BIOSTATISTICS & COMP. BIO ; PEZDARE ; HRS - 2 (1) ,
CREDIT - 4 : TOT HRS - 30 ; COURSE INSTRUCTOR: DR. J.S. ARACKIYAN

WEEK	HRS	TOPIC	TEACHING METHOD		LEARNING RESOURCE	METHODS OF EVALUATION
			ONLINE	OFFLINE		
I	2	Introduction & Scope	- PPT	Assignment	1. Introduction to Biostatistics	1. Written test
II	2	Statistical population	- Working out	Homework	By N. Gosman	2. Quiz
III	2	Variables & sampling	Maths	Problems	2) Textbook of Agricultural Statistics by Rangasamy R	3. Assignment
IV	2	Sampling				
V	2	Probability	"	"		
VI	2	Probability	"	"	3) Fundamentals of Biostatistics - Bernard Rabin	
VII	2	CA	"	"	4) Biostatistics for the Health Sciences - Clifford Blair	
VIII	2	Dispersion - standard deviation ; SE ; CI	"	"		
IX	2	Hypothesis testing -	"	"		
X	2	Test for significance	"	"		
XI	2	T-test	"	"		
XII	2	T-test	"	"		
XIII	2	chi square & its significance	"	"		
XIV	2	CI	"	"		

B.Sc. Zoology - Prog. Code: 23: SEM I
 CREDITS: 4 TOTAL HOURS: 60.

NEEK	No. of HOUR	UNIT	TOPIC
I	4	I	Introduction - collection of data
II	4	I	variables & constants - sampling
III	4	I	Sampling methods
IV	4	II	classification
V	4	II	Tabulation
VI	4	II	Graphs & its types
VII	4	III	I CA Theoretical frequency distribution
VIII	4	III	Measures of Central tendency Mean
IX	4	III	Median
X	4	III & IV	Mode Dispersion - Methods - Mean deviation
XI	4	IV	Standard deviation, Standard Error, Coefficient of variation
XII	4	V	Test for significance
XIII	4	V	Test for significance - t test
XIV	4	V	F - test
XV	4	V	Chi - square test II CA

COURSE CODE: UCZ0111; HOURS: 4 (2+2)
 MAX MKS: 100; COURSE INSTRUCTOR: DR. J.S. AROCKIAMARY

TEACHING METHODOLOGY		LEARNING RESOURCES	METHOD OF EVALUATION
ONLINE	OFFLINE		
PPT	Assignment	1. Statistical methods for Biologists - Palani Chamy	Written Test Quiz Assignment
PPT	Questionnaire Prep.		
PPT	Test	2. Biostatistics - Gnanamani	"
PPT & Working out problems	Home Work problems		
PPT		3. Statistics by Rangaswamy	"
PPT/Working out problems	"	4. Statistics by Anora & Melher	
"	"	5. Statistics by Banerjee	"
"	"	6. Veer Bal Reddy	
"	"	"	"
PPT	"	"	"
PPT/Working out Problems	"	"	"
"	"	"	"

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2020 - 2021

B.Sc. ZOOLOGY : CODE : 33 ; SEMESTER VI ; MICROBIOLOGY : U 220 C17
 5 hrs/week ; CREDIT - 5 ; Total hrs - 75 - 100 MARKS.
 COURSE INSTRUCTOR : DR. J.S. AROCKIAMARY

WEEK	No. of HRS	UNIT	TOPICS	TEACHING METHODOLOGY	LEARNING RESOURCES	METHOD OF EVALUATION
I	5	1	Intd to Microbiology. Bacteria - Anatomical structure - shape - morphology	PPT Chalk & talk	Microbiology: 1) Wulter Test 2) Power CB & Formalin Dagiswale. assessments	
II	5	1	Bacterial cell Organelles	PPT Chalk & talk	2) Sharma	3) Quiz
III	5	1	Gram staining, Fine structure of T ₄ virus	PPT Chalk & talk	3) Ananth Narayan & Parikes	4) Assignments
IV	5	2	(Gram staining) Nutritional Requirements of bacteria - Culture media & Culture Methods	PPT Chalk & talk	4) Pelegas 5) Mani & Arumagan.	
V	5	2	Pure culture Techniques	PPT Chalk & talk		

NEBIC	HRS	UNIT	TOPICS	TEACHING METHODOLOGY	LEARNING RESOURCES	EVALUATION METHOD
<u>VI</u>	5	2	Maintenance of bacterial culture CA I	PPT Chalk & Talk	Microbiology 1) Power & Diagrams	1) Written Test 2) Formative assessment
<u>VII</u>	5	3	Control of microorganisms	PPT	2) Books	3) Quiz
<u>VIII</u>	5	3	Control of microorganisms - Physical	Chalk & Talk		
<u>IX</u>	5	3	sterilization - Chemical	PPT Chalk & Talk	"	"
<u>X</u>	5	4	Microbiology of food			
<u>XI</u>	5	4	Role of microbes in food production; Pasteurization	PPT Chalk & Talk	"	"
<u>XII</u>	5	4	Food poisoning & Food Preservation CA II	PPT Chalk & Talk	"	"
<u>XIII</u>	5	4	Chemotherapy & Antibiotics	PPT Chalk & Talk	"	"
<u>XIV</u>	5	4	Microorganisms; Pathogenesis and prophylaxis - Bacterial	PPT Chalk & Talk	Microbiology - Parasitology	"
<u>XV</u>	5	4	Microorganisms; Pathogenesis Prophylaxis - Fungal, Viral.	PPT Chalk & Talk	Antithrombin	"

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M.Sc. Zoology ; PROG CODE : 23

HOURS : 1 ; CREDITS 4 ; MARKS : 100.

COURSE INSTRUCTOR : DR. J.S. AROCKIAMARY

SEMESTER : 2 ; COURSE CODE : PCZOD20

RESEARCH METHODOLOGY

WEEK	HOOR	UNIT	TOPIC	TEACHING METHODOLOGY	LEARNING RESOURCES	EVALUATION METHOD
I	1	2	Principle and Introduction - Chromatography	PPT Chalk & talk	Research Methodology D. Gurusami	1) Written Test 2) Formative assessment
II	1	2	Gel Chromatography	"	3) Palani Chamy x Sharmugavel	3) Quiz
III	1	2	Ion exchange chromatography	"	3) Bio Instrumentation - Vellakumari	4) Assignments
IV	1	2	Column chromatography	"		
V	1	2	Affinity chromatography	"		
VI	1	2	HPLC chromatography	PPT Chalk & talk	"	"
VII	1	2	GLC Chromatography	"	"	"
VIII	1	2	Principle & Application of Electrophoresis - Agarose	"	"	"
IX	1	2	SDS-PAGE - Electrophoresis	"	"	"
X	1	2	Immuno Electrophoresis	"	"	"
XI	1	2	Centrifugation - Principle	"	"	"
XII	1	2	Ultra-centrifugation	"	"	"
XIII	1	2	Applications of Radioactive Isotopes in Biology	PPT Chalk & talk	"	"
XIV	1	2	Counting Methods - GM Counters	"	"	"
XV	1	2	Scintillation Counters	"	"	"
XVI	1	2	PEU. Autoradiography	"	"	"

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P.G and Research Dept. of Zoology
Auxilium College (Autonomous)
Vellore - 632 006.

Odd Semester - 2020 - 2021

Teaching plan

Programme	M.Sc., Zoology
Programme code	23.03.03.01.01.01
Semester	III
Course	Clinical laboratory techniques
Hours	1 hr. per week
Credits	14
Total Hours	15 Hrs
Max Marks	40+60 marks.
Course code	PEZOE17
Course Instructor	Dr. A. Rajalakshmi

ODD SEMESTER - 2020 - 2021

Month	Week	No. of Hours	Course Unit	Topic	Teaching Methodology	Learning Resource	Methods of Evaluation
July	II Week	1	IV	CSF Collection	PPT in Google meet online	Net Source and MLT by Husejja	Test in Google classroom
	III Week	1	IV	CSF - Physical and Chemical Examination	PPT in Google meet online	"	"
	IV Week	1	IV	CSF - Microscopic Examination	"	"	"
	V - week	1	IV	Cerebral Juice Collection	"	"	"
August	I - week	1	IV	Cerebral Juice Testing at resting Condition	"	Net source.	"
	II - week	1	IV	Detection and estimation of gastric juice	"	"	"
	III - week	1	IV	Liver function test - function of liver	"	Net source and Animal Physiology by Agarwal	"
	IV - week	1	IV	Serum bilirubin	"	"	"

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Month	Week	No. of Hours	Unit	Topic	Teaching Methodology & Student Centered methods	Learning Resources	Methods of Evaluation
September	I Week	1	V	Serum protein and Enzyme	PPT in Google meet online	Net source Laboratory medicine by V.H. Tals	Test in Google Classroom.
				Formation of bilirubin.	offline - in Google Classroom		
	II	1	V	Cavity fluids - pleural fluid	PPT	Net source	"
				Read the upload notes in GCR	offline Assignment		
	III	1	V	Pericardial fluid.	PPT	Net source	"
function of Pericardial fluid.				offline assignment	Net by Mukerjee		
IV	1	V	Peritoneal fluid	PPT	"	"	
			function of Peritoneal fluid.	offline Assignment			
V	1	V	Amniotic fluid	PPT	"	"	
			function of amniotic fluid	offline Assignment			
October	I	1	V	Stool analysis	PPT	"	"
				Appearance & Composition	offline assignment		
	II	1	V	Collection of Stool	PPT	"	"
				Importance of Stool diagnosis.	offline assignment		
III	1	V	Stool- physical Examination	PPT	"	"	
			Chemical examination	offline assignment			
IV	1	V	Microscopic Examination of Stool	PPT	"	"	
			Nitrobes found in stool examination	offline assignment			
November	I	1	V	Examination of Intestinal Parasites.	PPT	"	"
				Effect of Intestinal Parasites.	offline assignment		
	II	1+1	V	Revision	<i>Have</i> Dr. J.S. AROCKIYANAR, M.Sc., Ph.D. Associate Professor & Head P.G. and Research Dept. of Zoology Annamalai College (Autonomous) Vellore-632 006		"

Programme	M.Sc., Zoology
Programme Code	23
Semester	III
Course	Limnology and Toxicology
Course Code	PCZ0517
Hours	2 hrs per week
Credits	4
Total Hours	30
Max Marks	40+60
Course Instructor	Dr. A. Rajalakshmi

Month	Week	No. of hours	Course Unit	Instructor: Dr. A. Rajalakshmi Topic	Teaching method + student center method	Learning resource	Method of Evaluation
July	II	2	IV	Toxicology basic Concepts	PPT in Google Meets online	Net source and Toxicology principle & methods by Subramanian	Test in Google classroom
	III	2	IV	Toxicokinetics - Principles	"	"	"
	IV	2	IV	Toxicokinetics - Absorption	"	"	"
	V	2	IV	Toxicokinetics - Distribution	"	"	"
	I	2	IV	Toxicokinetics - Biotransformation	"	"	"
	II	2	IV	Heavy metals and toxicity	Word document in Google meet - online	Environmental Toxicology by M.S. Satti	"
August	III	2	IV	Toxicokinetics - Elimination	PPT	Toxicology by Subramanian	These

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Month	Week	No. of hours	Unit	Topic	Teaching Methodology & Student Center methods	Learning Resources	Methods of Evaluation
	IV	2	IV	Toxicokinetics - Elimination	PPT in Google meet online	Toxicology by Subramanian	"
September	I	2	IV	Various types of toxicological agents, Toxicological destiny principles	"	"	"
				Four microbial toxin in human	offline Assignment		
	II	2	IV	Hazards, Risk and Control methods	Work document in Google meet, online.	Environmental toxicology by M.S. Sethi	"
	III	2	IV	Hazards, Risk and Control methods	"	"	"
	IV	2	IV	Read about control measure of hazard & Risk estimation of Fluoride and Mercury. Effect of Mercury	offline assignment Word Document offline Assignment	Toxicology by Subramanian "	"
	V	2	IV	Estimation of Chromium. Microbial toxicity Effect of Chromium.	Word Document offline Assignment	"	"
October	I	2	V	Aquatic environment Toxicant + Toxicity Effect of Fluoride	PPT offline Assignment	"	"
	II	2	V	Factor affect the environmental Conc of Toxicant Read upload notes	PPT offline Assignment	"	"
	III	2	V	Effect on Aquatic fauna physiological effect of fauna.	Word document offline Assignment	Environmental toxicology by M.S. Sethi	"
	IV	2	V	Toxicity test acute & chronic Read upload Notes	Word document offline Assignment	Toxicology by subramanian	"
November	I	2	V	LC-50, LD50 factors that modify toxicity Read upload notes	Word document offline Assignment	"	"
	II & III	2+2	IV V	Revision	"		
				Revision	"		

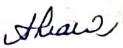
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Programme	M.Sc, Zoology
Programme Code	23
Semester	I
Course	Applied Biotechnology and Microbiology
Course Code	PCZOC20
Hours	6 hrs per week.
Credits	4
Total Hours.	90 hrs
Max. Marks.	40 + 60.
Course Instructor	Dr. A. Rajalakshmi

Month	Week	No of Hours	Course Instructor	Topics	Teaching methodology	Learning Resources	Methods of Evaluation
October	II	6	Dr. A. Rajalakshmi	Microbes in food production Bread, Yoghurt + cheese	PPT in Google class Room. offline assignment.	Microbiology by Dubey.	Test M Group classmate
	III	6	Dr. A. Rajalakshmi	Fermentation of Microbes Bread, Yoghurt + cheese (B.V.C)	PPT offline assignment.		
	IV	6	Dr. A. Rajalakshmi	Nutrient present in B.V.C. Butter, vinegar + beer	PPT offline assignment.		
		6	Dr. A. Rajalakshmi	Nutrient present. Wine, food spoilage and Preservation	PPT offline assignment.		
November	I	6	Dr. A. Rajalakshmi	Read upload Notes in G.R. Gene therapy, DNA Fingerprint, Transgenic Medicine, minisatellite	Word document offline assignment	A text book of Biotechnology by S. Chand	
	II	6	Dr. A. Rajalakshmi	Antibiotic discovery Antibiotic discovery	offline assignment	Immunology	
	III	6	Dr. A. Rajalakshmi	Hybridoma Technology	PPT	Dealing	

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Unit.	Topics.	Teaching methodology & Student center method.	Learning Resources.	Methods of Evaluation.
II	Monoclonal & Polyclonal antibodies.	PPT	Immunology (Dubey)	Test in Google Classroom.
	Advantage of polyclonal antibodies.	Offline assignment		
III	GEO for removal of specific pollutants	Word Document	Biotechnology by Satyanarayana.	"
	Read upload Notes in GfL	Offline Work.		
III	GEM for treating oil spills and GEM for detectable pesticide in soil and degradation.	Word document in Google meet.	Applied Biotechnology by Rama.	"
	Impact of pesticide in soil	Offline Work.		
III	Bioleaching, Bioning & Biosurfactant, Biosensors- Conventional, microbial, Urea alcohol.	Word document in Google meet.	"	"
	Read upload Notes	Offline.		
IV	Integrated multibiosensor GM papaya, tomato, Bt Brinjal and Golden rice	PPT		"
	Controversy about Bt Brinjal	Offline		
	Transgenic plants - applications.	PPT		
IV	Industrial enzymes, organic chemical, plastics.			"
	Vaccine producing plants and biofertilizer	Offline Work.		
V	Transgenic fish, chickens, mouse, cow and goat	PPT		"
	Read upload notes	Offline Work		
V	Transgenic Sheep, pig and dog	PPT		"
	Applications of transgenic animals	Offline work		
V	Molecular pharmacy, gene pharmacy in transgenic animals.	PPT		"
	Read upload notes	Offline Work		


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Even Semester - do do - do do

Biological Significance of Carbohydrate, Protein and lipids - Convergence of central metabolism Pathway - TCA /Kreb's cycle Electron transport System.

Unit - V

Water soluble vitamins - Structure, Classification, Sources, functions. Hyper and Hypo vitaminosis and deficiencies in man. Fat soluble vitamins. Structure, Classification, Sources, functions.

Hyper and Hypo vitaminosis and deficiencies in man. Metabolism of xenobiotics. Detoxification and Biotransformation.

Programme	M.Sc., Zoology
Programme code	d3
Semester	II
Course	Biochemistry
Course code	PEZOC20
Hours	6 hrs/week
Credits	4
Total hours	90 hrs
Max Marks	40 + 60
Course Instructor	A. Rajalakshmi

Month	Week	Nb. of Hours	Unit	Course Instructor: A. Rajalakshmi Topic	Teaching Methodology & Student Centre methods	Learning Resources	Method of Evaluation	
January	I	6	I	Structure of album - Types of bonds - Covalent, ionic and hydrogen	PPT in Google Meet	Biochemistry Vazrakumari.	Test in Google classroom	
	II	6	I	Zwitter ions - Isoelectric point. Water - Biological importance, Physical properties, structure, interaction in aqueous solution; pH and buffers.	Word Document in Google Meet	"	"	
	III	6	I	Acid Base balance, Henderson Hassel - bach equation, Biological importance of Buffers, Acids and Alkalosis.	PPT in Google Meet	"	"	
	IV	6	II	Electrolyte and Water balance, Body fluids, Milk, Calostrium, Amniotic fluid and CSF and Urine.	Word Document in Meet	"	"	
	V	6	II	Amino acids. Structure, classification of amino acids and properties.	PPT in Google Meet	Biochemistry Ambika sharmya	"	
				III	Protein, classification of proteins based on their structure, properties.	"	"	"

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Month	Week	No. of Hours	Unit	Topic	Teaching Methodology and student Centre Method	Learning Resources	Method of Evaluation
	VI	6	III	Metabolism - Deamination, Transamination, Transmethylation and Krebs's Henslet cycle (Urea cycle). Enzyme, Nomenclature, Classification, Properties of enzyme.	PPT	Biochemistry (Veerakumar) (Ambikashanmugan)	Test in Classroom
	VII	6	III	Mode of enzyme action, enzyme Substrate Compounds.	Word Document	"	"
	VIII	6	IV	Carbohydrate; Structure, classification Metabolism- Glycogenesis, Glycogenolysis Gluconeogenesis, Glycolysis- EMP; Hexose monophosphate Shunt. Lipids Structure and Classification.	"	"	"
	IX	6	IV	Biosynthesis and oxidation of fatty acid. Biological significance of Carbohydrate, Protein and lipid.	"	"	"
	X	6	IV	Convergence of central metabolism pathway- TCA / Krebs cycle and	PPT	"	"
	XI	6	V	Electron transport system.	"	"	"
	XII	6	V	Water soluble vitamins- Structure, Classification, sources, functions.	"	"	"
	XIII	6	V	Hyper and Hypo vitaminosis and deficiencies in man.	"	"	"
	XIV	6	V	Fat soluble vitamins, Structure, Classification, sources, functions.	"	"	"
	XV	6	V	Hyper and Hypo vitaminosis and deficiency in man.	"	"	"
	XV	6	V	Metabolism of Xenobiotics. Detoxification and Biotransformation	"	"	"

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Month	Week	No. of Hour	Unit	Course Instructor: Dr. A. Rajalakshmi Topic	Teaching Methodology & Student Center methods	Learning Resources	Methods of Evaluation
January	I	2	I	Human Rights - Meaning and Definition - origin and Development - Elements of human rights and kinds.	PPT in Google Meet	Human Rights Book.	Oral questions
	II	2	II	Indian Constitution and Human Right Meaning Definition - features of Indian Constitution.	"	"	"
	III	2	II	Federalism - Preamble - fundamental Right - Directive principles of state Policy - Right to Constitutional Remedies.	"	"	"
	IV	2	III	Universal Declaration and International Covenant on Human Rights. origin of Universal Declaration - Provisions - General - Civil and political Rights - Effects and influence of Universal Declaration.	"	"	"
	V	2	III	Distinction between the Indian Constitution and Universal Declaration.	"	"	"
	VI	2	IV	International Conventions on political Rights. Economic, social and cultural. United Nations and Human Rights. Provisions relating to Human Rights under UN charter.	"	"	"
	VII	2	IV	Role of UN in Promotion and Protection - Through principal organs. UN charter based institutions. UN Specialized Agencies.	"	"	"
	VIII	2	IV	Human Rights and Domestic Jurisdiction - UN Commission on Human Rights.	"	"	"
	IX	2	V	Human Right - and vulnerable groups. Anti Human Trafficking and Protection of vulnerable groups. Policies and Acts.	"	"	"


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Month	Week	No. of Hours	Unit	Topic	Teaching Methodology & Student Center Methods	Learning Resource.	Method of Evaluation.
71	X	2	V	National policy for Children 2013.	PPT	Human Rights Book	Oral questions
	XI	2	V	Juvenile Justice Act 2000.			
	XII	2	V	Prevention on sexual offences Against Children Act 2012. Criminal procedure and Amendment Act 2013.	"	"	"
	XIII	2	V	National policy for Empowerment of Women 2001 - violence.			
	XIV	2	V	The sexual Harassment of Women at Workplace Act 2013. Empowerment of Women at Social Empowerment of Women.	"	"	"
	XV	2	V	Women in difficult circumstances, Violence against Women.			
	XVI	2	V	Rights of the girl child, Mass Media, operational strategies.	"	"	"

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PCZO F. No	Month	Week	No. of Hours	Unit	Course Instructor: Dr. A. Rajalakshmi Topic	Teaching Methodology and student center Method	Learning Resource	Method of Evaluation
	January	I	3	III	Wild life of India - Value of Wildlife Positive and Negative.	PPT and Black board		Oral question
		II	3	III	Morphological and physiological adaptation of Endangered and Threatened Species.	"		Home test
		III	3	III	Population dynamics, Exponential and logistic	"		"
		IV	3	III	Local and Regional Extinction, Red data book.	"		"
		V	3	IV	Wildlife protection Act.	"		"
		VI	3	IV	In situ and Ex situ Conservation	"		"
		VII	3	IV	IUCN Red list - CITES.	"		"

		VIII	3	V	Genplasm Conservation and Cryogenic Preservation. Assisted Reproduction.	"		"
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		IX	3	V	Captive breeding, Non-invasive	"		"
		XI	3	V	Minimal invasive method.	"		"
		XII	3	V	Scat analysis and Radio telemetry.	"		"
		XIII	3	V	Habitat Suitability.	"		"
		XIV	3	V	Remote Sensing and GIS.	"		"

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